# S7065

**Version 1.0a**


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## About this guide

This user guide contains the information you need when installing and configuring the motherboard.

## How this guide is organized

This guide contains the following parts:

**Chapter1: Instruction**
This chapter describes the features of the motherboard and the new technology it supports.

**Chapter2: Board Installation**
This chapter lists the hardware setup procedures that you need to abide by when installing system components. It includes description of the jumpers and connectors on the motherboard.

**Chapter3: BIOS Setup**
This chapter tells how to change system settings through the BIOS setup menu. Detailed descriptions of the BIOS parameters are also provided.

**Chapter4: Diagnostics**
This chapter introduces some BIOS codes and technical terms to provide better service for the customers.

**Appendix: Fan and Temp Sensors**
This section aims to help readers identify the locations of some specific Fan and Temp Sensors on the motherboard. A table of BIOS Temp sensor name explanation is also included for readers' reference.

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# Before you begin…

## Check the box contents!

The retail motherboard package should contain the following:

| Item | Name | P/N Number | Description |
|---|---|---|---|
| | 1x S7065 Motherboard | 5411T4800003 | TF-MB;SBU,S7065, S7065A2NRF/MB,R1.0,TYAN |
| | | 5411T4800004 | TF-MB;SBU,S7065, S7065WA2NRF/MB,R1.0,TYAN |
| | 6x Serial ATA Cable | 422736300010 | TF-CABLE ASSY;SBU,SATA-500MM,S2865 |
| | 1x I/O shielding | 340T48000001 | TF-I/O SHIELDING ASSY;SBU,SGCC,S7065 |
| | 1x S7065 Quick Installation guide | 5618T4800001 | TF-SINGLE PAGE;SBU,V1.0,Quick Installation Guide, D2184-100,Color printing,S7065 |
| | 1x TYAN® Driver CD | 5651T4630005 | TFSOFTWARE;SBU,TYAN Driver CD FOR INTEL C600 Series |

**IMPORTANT NOTE:**

If any of these items are missing, please contact your vendor/dealer for replacement before continuing with the installation process.

# Chapter 1: Instruction

## 1.1 - Congratulations

You have purchased the powerful TYAN® S7065 motherboard, based on the Intel® Patsburg-A (PCH). The S7065 is designed to support dual Intel® Xeon E5-2600 (LGA2011) Series Processors and up to 512GB LR-DIMM (800, 1066 and 1333MHz), 256GB R-DIMM (800, 1066, 1333 and 1600MHz) DDR3 memory modules. Leveraging advanced technology from Intel®, the S7065 is capable of offering scalable 32 and 64-bit computing, high-bandwidth memory design, and lightning-fast PCI-E bus implementation.

The S7065 not only empowers you in today's demanding IT environment but also offers a smooth path for future application upgradeability. All of these rich feature sets provides the S7065 with the power and flexibility to meet demanding requirements for today's IT environments.

The TYAN S7065 series is designed around several different configurations which are detailed in the following 1.2 Hardware Specification section:

## 1.2 - Hardware Specifications

### TYAN S7065 (S7065A2NRF)

| | | |
|---|---|---|
| **Processor** | **Supported CPU Series** | Intel Xeon Processor E5-2600 Series |
| | **Socket Type / Q'ty** | (2) LGA2011 |
| | **Thermal Design Power (TDP) wattage** | Max up to 150W |
| | **System Bus** | Up to 8.0/ 7.2/ 6.4 GT/s with Intel QuickPath Interconnect (QPI) support |
| **Chipset** | **PCH** | Intel C602 |
| | **Super I/O** | NCT5577D |
| | **PCI-E Switch** | Pericom PI3PCIE3412 |
| **Memory** | **Supported DIMM Qty** | (8)+(8) DIMM slots |
| | **DIMM Type / Speed** | DDR3/DDR3L 800 / 1066 / 1333 / 1600 RDIMM, 800 / 1066 / 1333 UDIMM / LRDIMM / Support DDR3 Unbuffered and Register ECC |
| | **Capacity** | up to 128GB UDIMM / 256GB RDIMM / 512GB LRDIMM |
| | **Memory channel** | 4 Channels per CPU |
| | **Memory voltage** | 1.5V or 1.35V |

| | | | |
|---|---|---|---|
| **Expansion Slots** | **PCI-E** | | (1) PCI-E x4 slot ( x4 link, slot #6)<br>(1) PCI-E x16 slot ( x16 link or x8 link, slot #5)<br>(1) PCI-E x8 slot ( x0 link or x8 link, slot #4)<br>(1) PCI-E x16 slot ( x16 link or x8 link, slot #3)<br>(1) PCI-E x8 slot ( x0 link or x8 link, slot #2)<br>(1) PCI-E x8 slot (w/ x4 link PCH), slot #1 |
| **LAN** | **Port Q'ty** | | (2) GbE ports |
| | **Controller** | | Intel 82574L |
| **Storage** | **SATA** | **Connector** | (10) SATA |
| | | **Controller** | Intel C602 |
| | | **Speed** | (2)6.0Gb/s BLUE ; (4)3.0Gb/s black ; (4)3.0Gb/s 1BLUE+3BLACK |
| | | **RAID** | RAID 0/1/10/5 (Intel RST) |
| **Audio** | **Chipset** | | Realtek ALC892-GR |
| | **Feature** | | HDA7.1+2channel |
| **FireWire** | **Port Q'ty** | | (2)1394 ports |
| | **Chipset** | | VIA VT6315 |
| **Input /Output** | **USB** | | (7) USB2.0 ports (2 at rear, 4 via cable, 1 type A onboard) / (4) USB3.0 ports (4 at rear) |
| | **COM** | | (1) port (at rear) |
| | **Audio** | | (1) 2x5-pin front panel audio header （line out and Mic in)<br>(1) Line-in, (1)Line-out, (1)Mic-in, (1)Surround, (1)Side surround, (1)CEN/LFE at rear |
| | **S/PDIF In** | | (1) Coaxial SPDIF In |
| | **S/PDIF Out** | | (1) Optical SPDIF out |
| | **RJ-45** | | (2) GbE ports |
| | **Power** | | (1) ATX24-pin + (1)8-pin + (1)8-pin power connectors /(1) 4-pin power connector for PCI-E SLOT |
| | **PSMI** | | (1) 1x5-pin header |
| | **SGPIO** | | (1) SATA SGPIO header<br>(2) SAS SGPIO header |
| | **Front Panel Header** | | (1) 2x12-pin FPB header |
| | **SATA** | | (8) SATA-II and (2) SATA-III connectors |
| **System Monitoring** | **Chipset** | | Winbond W83795G |
| | **Voltage** | | Monitors voltage for CPU, memory, chipset & power supply |
| | **Fan** | | Total (7) 4-pin headers / (1)10x2-pin fan header |
| | **Temperature** | | Monitors temperature for CPU & system environment |
| **BIOS** | **Brand / ROM size** | | AMI / 8MB |
| | **Feature** | | Plug and Play (PnP) /PCI2.3 /WfM2.0 /SMBIOS2.3 /PXE boot / ACPI 2.0 power management /Power on mode after power recovery / User-configurable H/W monitoring / Auto-configurable of hard disk types |

| | | |
|---|---|---|
| **Physical Dimension** | **Form Factor** | SSI EEB |
| | **Board Dimension** | 12"x13" (305x330mm) |
| **Operating System** | **OS supported list** | Please refer to our OS supported list. |
| **Regulation** | **FCC (DoC)** | Class B |
| | **CE (DoC)** | Yes |
| **Operating Environment** | **Operating Temp.** | 10° C ~ 35° C (50° F~ 95° F) |
| | **Non-operating Temp.** | - 40° C ~ 70° C (-40° F ~ 158° F) |
| | **In/Non-operating Humidity** | 90%, non-condensing at 35° C |
| **RoHS** | **RoHS 6/6 Compliant** | Yes |
| **Package Contains** | **Motherboard** | (1) S7065 Motherboard |
| | **Manual** | (1) User's manual / (1) Quick Ref. Guide |
| | **Installation CD** | (1) TYAN installation CD |
| | **I/O Shield** | (1) I/O Shield |
| | **Cable SATA** | (1) SATA signal cable |

## TYAN S7065 (S7065WA2NRF)

| | | |
|---|---|---|
| **Processor** | **Supported CPU Series** | Intel Xeon Processor E5-2600 Series |
| | **Socket Type / Q'ty** | (2) LGA2011 |
| | **Thermal Design Power (TDP) wattage** | Max up to 150W |
| | **System Bus** | Up to 8.0/ 7.2/ 6.4 GT/s with Intel QuickPath Interconnect (QPI) support |
| **Chipset** | **PCH** | Intel C602 |
| | **Super I/O** | NCT5577D |
| | **PCI-E Switch** | Pericom PI3PCIE3412 |
| **Memory** | **Supported DIMM Qty** | (8)+(8) DIMM slots |
| | **DIMM Type / Speed** | DDR3/DDR3L 800 / 1066 / 1333 / 1600 RDIMM, 800 / 1066 / 1333 UDIMM / LRDIMM / Support DDR3 Unbuffered and Register ECC |
| | **Capacity** | up to 128GB UDIMM / 256GB RDIMM / 512GB LRDIMM |
| | **Memory channel** | 4 Channels per CPU |
| | **Memory voltage** | 1.5V or 1.35V |
| **Expansion Slots** | **PCI-E** | (1) PCI-E x4 slot ( x4 link, slot #6)<br>(1) PCI-E x16 slot ( x16 link or x8 link, slot #5)<br>(1) PCI-E x8 slot ( x0 link or x8 link, slot #4)<br>(1) PCI-E x16 slot ( x16 link or x8 link, slot #3) |

| | | | |
|---|---|---|---|
| | | | (1) PCI-E x8 slot ( x0 link or x8 link, slot #2)<br>(1) PCI-E x8 slot (w/ x4 link PCH), slot#1 |
| **LAN** | **Port Q'ty** | | (2) GbE ports |
| | **Controller** | | Intel 82574L |
| **Storage** | **SAS** | **Connector** | (8) SAS |
| | | **Controller** | Intel C602 |
| | | **Speed** | 3.0 Gb/s |
| | | **RAID** | RAID 0/1/10 |
| | **SATA** | **Connector** | (6) SATA |
| | | **Controller** | Intel C602 |
| | | **Speed** | (2) 6.0 Gb/s (blue color), (4) 3.0 Gb/s (black color) |
| | | **RAID** | RAID 0/1/10/5 (Intel RST) |
| **Audio** | **Chipset** | | Realtek ALC892-GR |
| | **Feature** | | HDA7.1+2channel |
| **FireWire** | **Port Q'ty** | | (2)1394 ports |
| | **Chipset** | | VIA VT6315 |
| **Input /Output** | **USB** | | (7) USB2.0 ports (2 at rear, 4 via cable, 1 type A onboard) / (4) USB3.0 ports (4 at rear) |
| | **COM** | | (1) port (rear) |
| | **SAS SGPIO** | | (2) SAS SGPIO Header |
| | **Audio** | | (1)2x5-pin front panel audio header<br>(line out and Mic in)<br>(1) Line-in, (1)Line-out, (1)Mic-in, (1)Surround, (1)Side surround, (1)CEN/LFE at rear |
| | **S/PDIF In** | | (1) Coaxial SPDIF In |
| | **S/PDIF Out** | | (1) Optical SPDIF out |
| | **RJ-45** | | (2) GbE ports |
| | **Power** | | (1) ATX24-pin + (1)8-pin + (1)8-pin power connectors /(1) 4-pin power connector for PCI-E SLOT |
| | **PSMI** | | (1) 1x5-pin header |
| | **SATA SGPIO** | | (1) SATA SGPIO Header |
| | **Front Panel Header** | | (1) 2x12-pin FPB Header |
| | **SATA** | | (4) SATA-II and (2) SATA-III connectors |
| | **SAS** | | (8) SAS connectors |
| **System Monitoring** | **Chipset** | | Winbond W83795G |
| | **Voltage** | | Monitors voltage for CPU, memory, chipset & power supply |
| | **Fan** | | Total (7) 4-pin headers /(1)10x2-pin fan header |
| | **Temperature** | | Monitors temperature for CPU & system environment |
| **BIOS** | **Brand / ROM size** | | AMI / 8MB |
| | **Feature** | | Plug and Play (PnP) /PCI2.3 /WfM2.0 /SMBIOS2.3 /PXE boot / ACPI 2.0 power management /Power on mode after power recovery / User-configurable H/W monitoring / Auto-configurable of hard disk types |

| | | |
|---|---|---|
| **Physical Dimension** | **Form Factor** | SSI EEB |
| | **Board Dimension** | 12"x13" (305x330mm) |
| **Operating System** | **OS supported list** | Please refer to our OS supported list. |
| **Regulation** | **FCC (DoC)** | Class B |
| | **CE (DoC)** | Yes |
| **Operating Environment** | **Operating Temp.** | 10° C ~ 35° C (50° F~ 95° F) |
| | **Non-operating Temp.** | - 40° C ~ 70° C (-40° F ~ 158° F) |
| | **In/Non-operating Humidity** | 90%, non-condensing at 35° C |
| **RoHS** | **RoHS 6/6 Compliant** | Yes |
| **Package Contains** | **Motherboard** | (1) S7065 Motherboard |
| | **Manual** | (1) User's manual / (1) Quick Ref. Guide |
| | **Installation CD** | (1) TYAN installation CD |
| | **I/O Shield** | (1) I/O Shield |
| | **Cable SATA** | (1) SATA signal cable |

Remember to visit TYAN®'s Website at **http://www.TYAN.com**. There you can find information on all of TYAN®'s products with FAQs, online manuals and BIOS upgrades and more.

## 1.3 - Software Specifications

For OS (operation system) support, please check the TYAN® website for the latest information.

# NOTE

# Chapter 2: Board Installation

You are now ready to install your motherboard.

**How to install our products right… the first time**

The first thing you should do is reading this user's manual. It contains important information that will make configuration and setup much easier. Here are some precautions you should take when installing your motherboard:

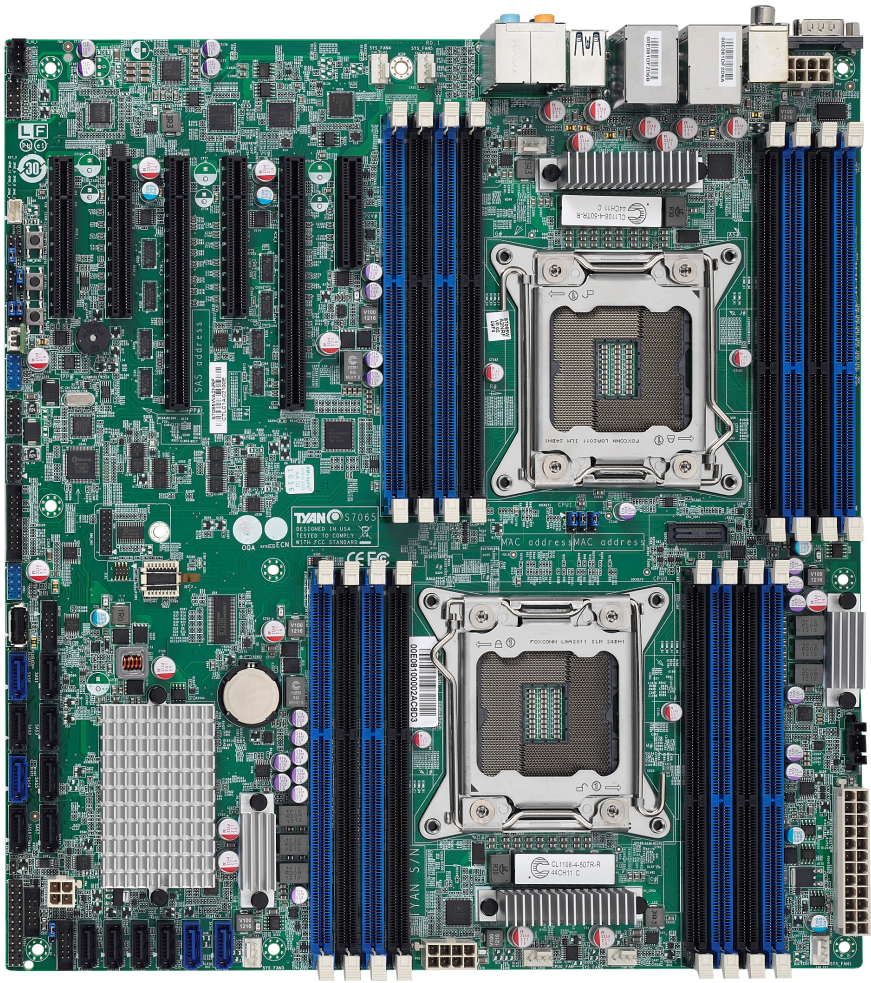
(1) Ground yourself properly before removing your motherboard from the antistatic bag. Unplug the power from your computer power supply and then touch a safely grounded object to release static charge (i.e. power supply case). For the safest conditions, TYAN® recommends wearing a static safety wrist strap.
(2) Hold the motherboard by its edges and do not touch the bottom of the board, or flex the board in any way.
(3) Avoid touching the motherboard components, IC chips, connectors, memory modules, and leads.
(4) Place the motherboard on a grounded antistatic surface or on the antistatic bag that the board was shipped in.
(5) Inspect the board for damage.

The following pages include details on how to install your motherboard into your chassis, as well as installing the processor, memory, disk drives and cables.

**Caution!**

1. To avoid damaging the motherboard and associated components, do not use torque force greater than 7kgf/cm (6.09 lb/in) on each mounting screw for motherboard installation.
2. Do not apply power to the board if it has been damaged.

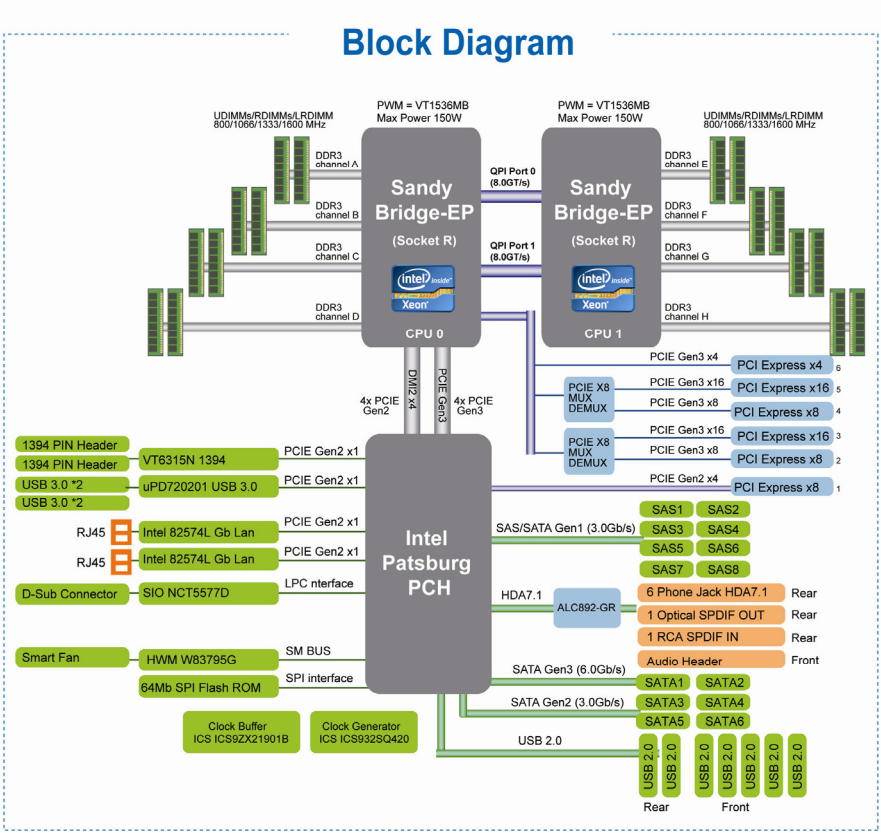
## 2.1 - Board Image




**S7065**

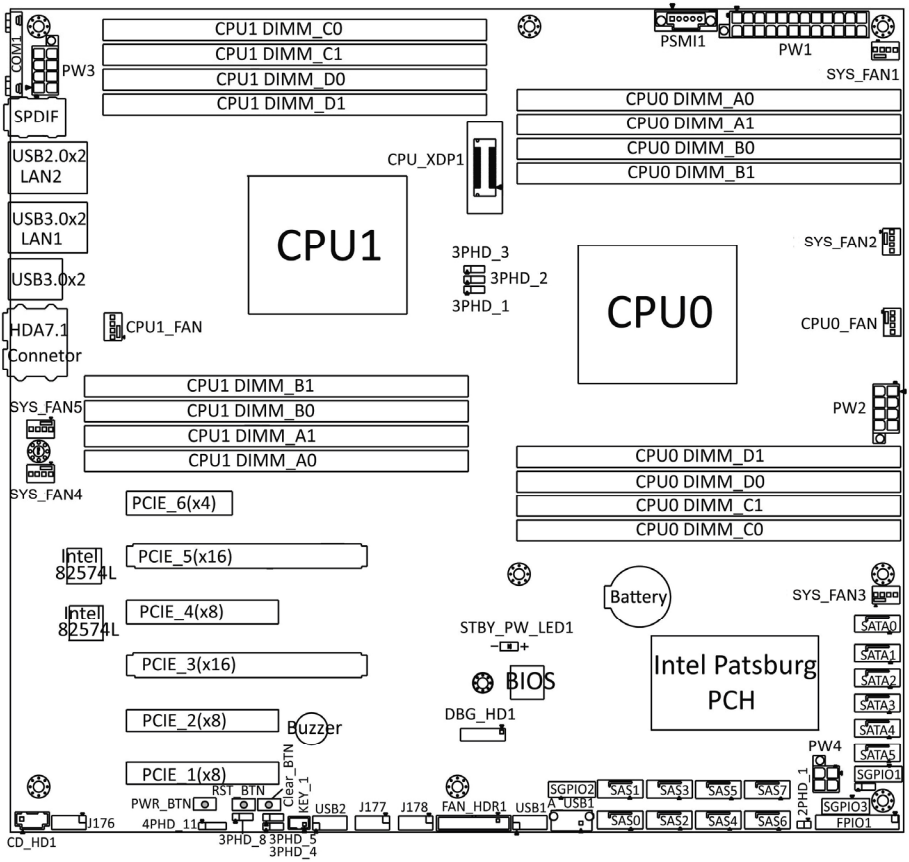
This diagram is representative of the latest motherboard revision available at the time of publishing. The board you receive may not look exactly like the above diagram.

## 2.2 - Block Diagram




**S7065 Block Diagram**

## 2.3 - Board Parts, Jumpers and Connectors




**Important Notes to the User**

- **"▲" indicates the location of "Pin 1".**
- **The diagram is representative of the latest board revision available at the time of publishing. The board you received may not look exactly like this diagram.**

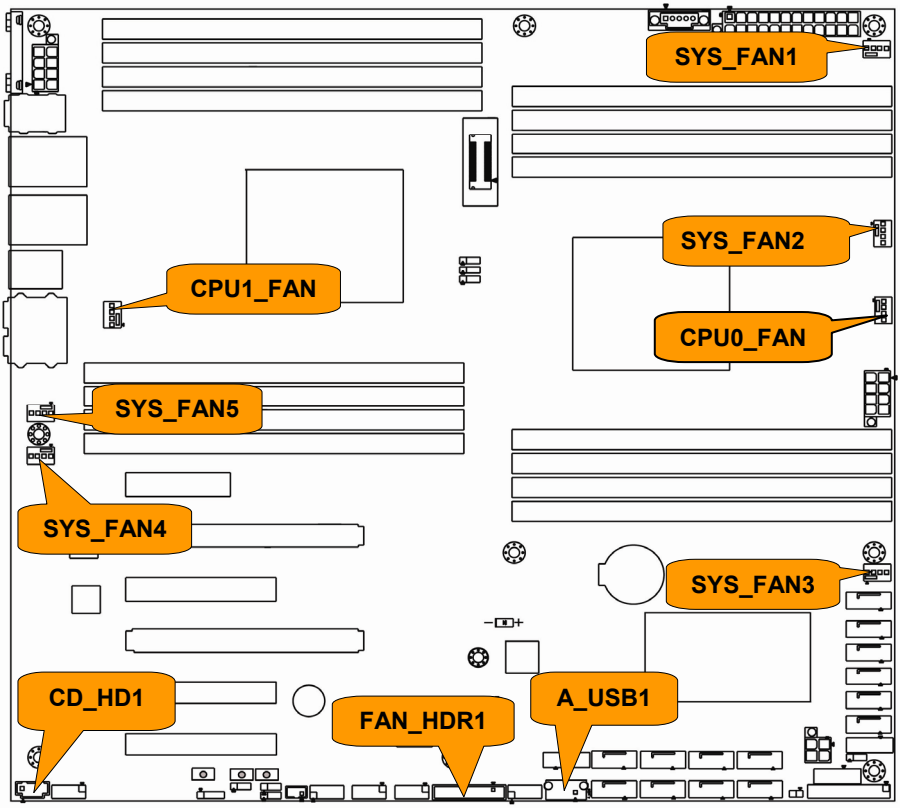
**Jumper Legend**

| | | |
|---|---|---|
| ■ ■ | **OPEN - Jumper OFF** | Without jumper cover |
| ■ ■ | **CLOSED - Jumper ON** | With jumper cover |

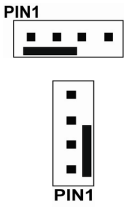
## Jumpers & Connectors

| Jumper/Connector | Function |
|---|---|
| SYS FAN1~5 | 4-pin Fan Power Connector |
| CPU0~1FAN | 4-pin CPU0/CPU1 Fan Power Connector |
| FAN_HDR1 | System Fan Header |
| SPDIF | Coaxial-Input(upper) / Optical-Output(lower) |
| J176 | Front Panel Audio |
| J177/J178 | 1394 Pin Header |
| SGPIO1 | SATA 0~5 SGPIO Header |
| SGPIO2 | SAS 0~3 SGPIO Header |
| SGPIO3 | SAS 4~7 SGPIO Header |
| CD_HD1 | CD Input Header |
| PSIMI1 | PSMI Connector |
| FPIO_1 | Front Panel Header |
| FAN_HDR1 | Fan Connector for Barebone |
| A_USB1 | TYPE-A USB From PCH |
| USB1/ USB2 | Front USB Header |
| KEY1 | Patsburg Upgrade ROM Header |
| Reset BTN | Reset Button |
| Clear BTN | RTC reset Button |
| 2PHD_1 | Intruder Header |
| 3PHD_1/2/3 | CPU XDP Bypass Jumper |
| 3PHD_4 | ME Recovery Mode Jumper |
| 3PHD_5 | BIOS Recovery Mode Jumper |
| 3PHD_8 | Security Override Jumper |
| 4PHD_11 | BUZZER disable Jumper |
| DBG_HD1 | TYAN Module Header |
| SATA0/SATA1 | SATA3.0 Connector |
| SATA2/SATA5 | SATA2.0 Connector |
| SAS0~7 | PCH SAS Connector |

## Jumper Placement



**SYS FAN1~5/CPU0~1FAN: 4-Pin FAN Connector**

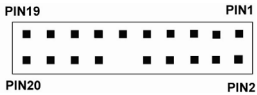



| Pin | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Signal | GND | P12V | FAN_TACH | FAN_PWM |

**NOTE:**

Use this header to connect the cooling fan to your motherboard to keep the system stable and reliable.

**FAN_HDR1: FAN Connector for Barebone**

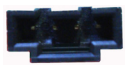



| Signal | Pin | Pin | Signal |
|---|---|---|---|
| TACH1 | 1 | 2 | TACH6 |
| TACH2 | 3 | 4 | TACH7 |
| TACH3 | 5 | 6 | TACH8 |
| TACH4 | 7 | 8 | TACH9 |
| TACH5 | 9 | 10 | TACH10 |
| GND | 11 | 12 | KEY |
| PWM2 | 13 | 14 | PWM1 |
| TACH11 | 15 | 16 | SDA |
| TACH12 | 17 | 18 | SCL |
| VCC3_AUX | 19 | 20 | PWM3 |

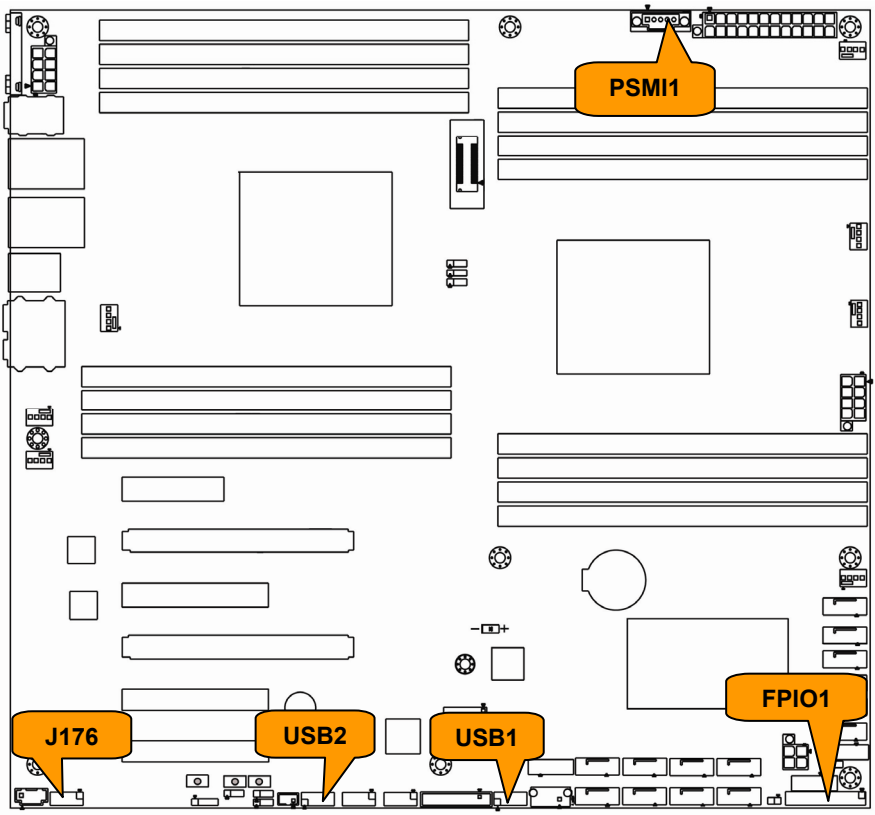
**A_USB1: Vertical TYPE-A USB From PCH**

| Pin | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Signal | +5V | USB DATA2- | USB DATA2+ | GND |

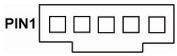
**CD_HD1: CD Input Header**



| Pin | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Signal | CD_IN_L | GND | GND | CD_IN_R |


PSMI1
J176
USB2
USB1
FPIO1

**PSMI1: PSMI Connector**

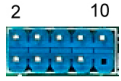



| Pin | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| Signal | SMB_CLK | SMB_DAT | PSU Alert# | GND | VCC3 |

**FPIO_1: Front Panel Header**

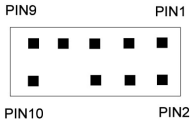
| Signal | Pin | Pin | Signal |
|---|---|---|---|
| PWRLED+ | 1 | 2 | FPPW (VCC3_AUX) |
| KEY | 3 | 4 | NA |
| PWRLED- | 5 | 6 | NA |
| HD_LED+ | 7 | 8 | HWM_FAULT_LED- |
| HD_LED- | 9 | 10 | SYS_FAULT_LED- |
| PWR_SW# | 11 | 12 | LAN1_ACTIVE_LED+ |
| GND | 13 | 14 | LAN1_ACTIVE_LED- |
| RST_SW# | 15 | 16 | SDA |
| GND | 17 | 18 | SCL |
| NA | 19 | 20 | INTRUDER# |
| FPIO_TEMP_IN | 21 | 22 | LAN2_ACTIVE_LED+ |
| NMI_SW# | 23 | 24 | LAN2_ACTIVE_LED- |

**USB1/USB2: Front USB Header**

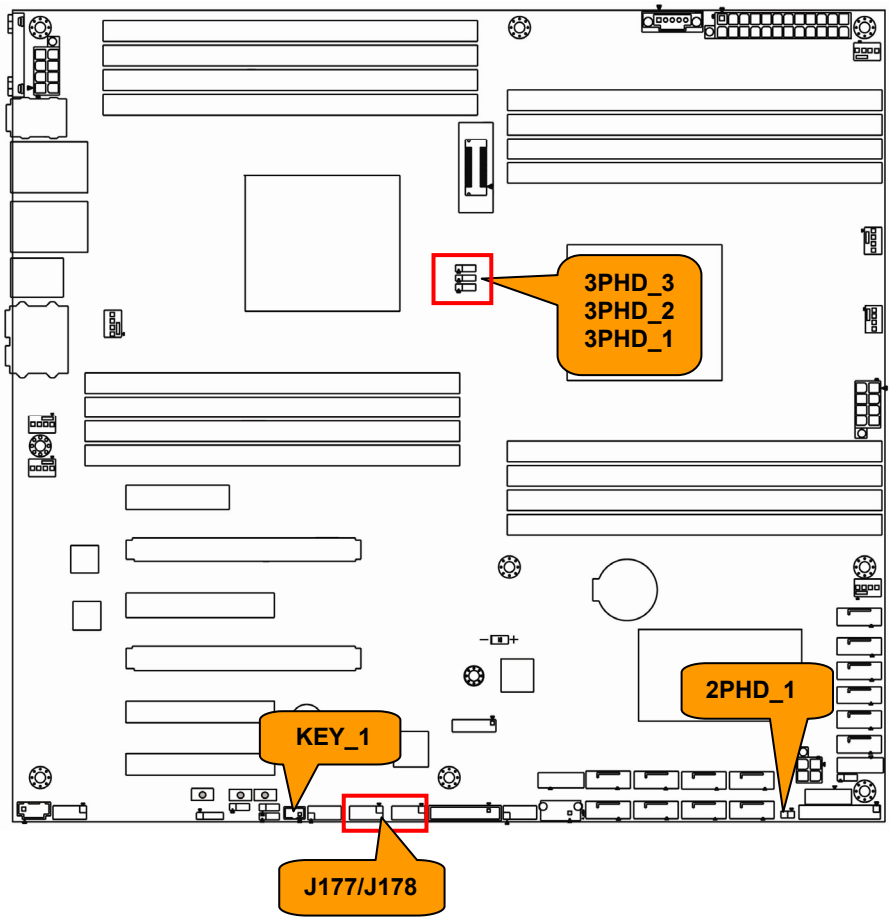



| Signal | Pin | Pin | Signal |
|---|---|---|---|
| VCC | 1 | 2 | VCC |
| USB DATA1- | 3 | 4 | USB DATA2- |
| USBDATA1+ | 5 | 6 | USB DATA2+ |
| GND | 7 | 8 | GND |
| KEY | 9 | 10 | NC |

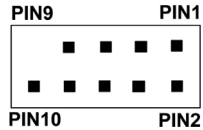
**J176: Front Panel Audio**




| Signal | Pin | Pin | Signal |
|---|---|---|---|
| MIC2-L | 1 | 2 | GND |
| MIC2-R | 3 | 4 | FP_Present |
| LINE2-R | 5 | 6 | MIC2-JD |
| GND | 7 | 8 | Key |
| LINE2_L | 9 | 10 | LINE2-JD |

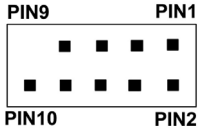

3PHD_3
3PHD_2
3PHD_1
2PHD_1
KEY_1
J177/J178

**J177: 1394 Pin Header**



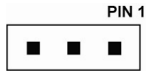

| Signal | Pin | Pin | Signal |
|---|---|---|---|
| XTP_A_P_0 | 1 | 2 | XTP_A_N_0 |
| GND | 3 | 4 | GND |
| XTP_B_P_0 | 5 | 6 | XTP_B_N_0 |
| VCC12_1394 | 7 | 8 | VCC12_1394 |
| KEY | 9 | 10 | GND |

**J178: 1394 Pin Header**




| Signal | Pin | Pin | Signal |
|---|---|---|---|
| XTP_A_P_1 | 1 | 2 | XTP_A_N_1 |
| GND | 3 | 4 | GND |
| XTP_B_P_1 | 5 | 6 | XTP_B_N_1 |
| VCC12_1394 | 7 | 8 | VCC12_1394 |
| KEY | 9 | 10 | GND |

**KEY1: PCH DYNAMIC SKUING KEY For Upgrade ROM Module**

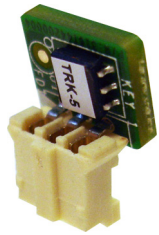



| Pin | 1 | 2 | 3 |
|---|---|---|---|
| Signal | GND | FM_SAS_SW_RAID_KEY | GND |

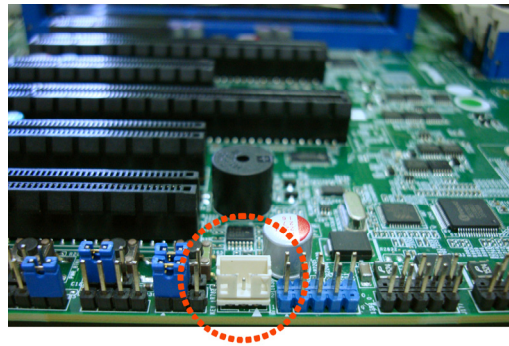
**Patsburg Upgrade ROM Key Installation**

Follow the steps described later to install the Patsburg Upgrade ROM Key.

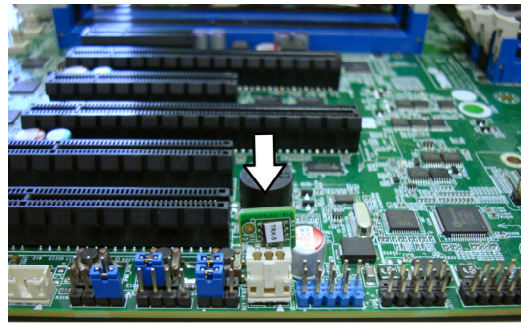
1. Take out the Patsburg Upgrade ROM Key.



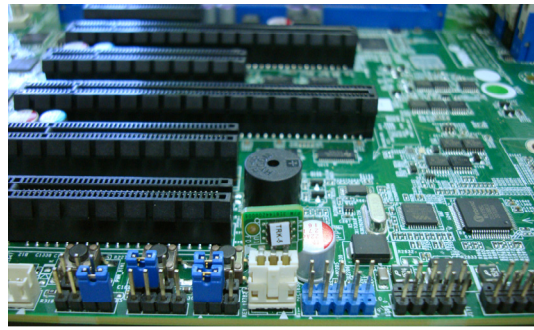
2. Locate the Patsburg Upgrade ROM Header.



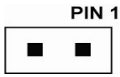
3. Insert the Upgrade ROM Key in the direction as the arrow shows.



4. You have completed the Patsburg Upgrade ROM Key installation.

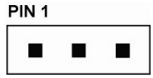


**2PHD_1: INTRUDER Header**




| Pin | Signal |
|---|---|
| 1 | PCH_INTRUDER_N |
| 2 | GND |

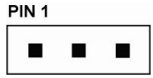
**3PHD_1 / 3PHD_2: CPU XDP bypass Jumper**




| Pin | 1 | 2 | 3 |
|---|---|---|---|
| Signal | CPU0_TDO | XDP_TDO | CPU1_TDO |

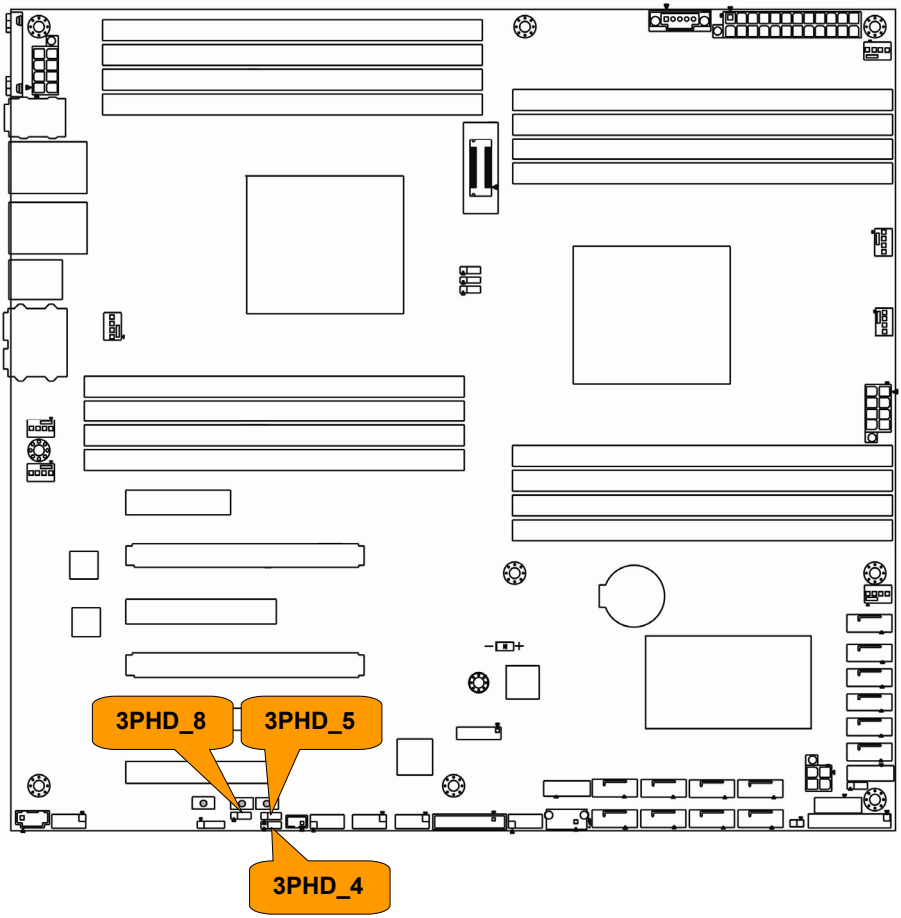
| Default: Only CPU0 | 3PHD_1 | 3PHD_2 | 3PHD_3 |
|---|---|---|---|
| Only CPU0 Installed | 1-2 | 1-2 | 1-2 |
| Only CPU1 Installed | 2-3 | 2-3 | 1-2 |
| Both CPU Installed | 1-2 | 2-3 | 2-3 |

**3PHD_3: CPU XDP bypass Jumper**

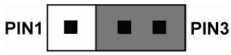



| Pin | 1 | 2 | 3 |
|---|---|---|---|
| Signal | NC | CPU0_TDO | CPU1_TDI |

| Default: Only CPU0 | 3PHD_1 | 3PHD_2 | 3PHD_3 |
|---|---|---|---|
| Only CPU0 Installed | 1-2 | 1-2 | 1-2 |
| Only CPU1 Installed | 2-3 | 2-3 | 1-2 |
| Both CPU Installed | 1-2 | 2-3 | 2-3 |


3PHD_8
3PHD_5
3PHD_4

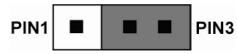
### 3PHD_4: ME RECOVERY MODE Jumper

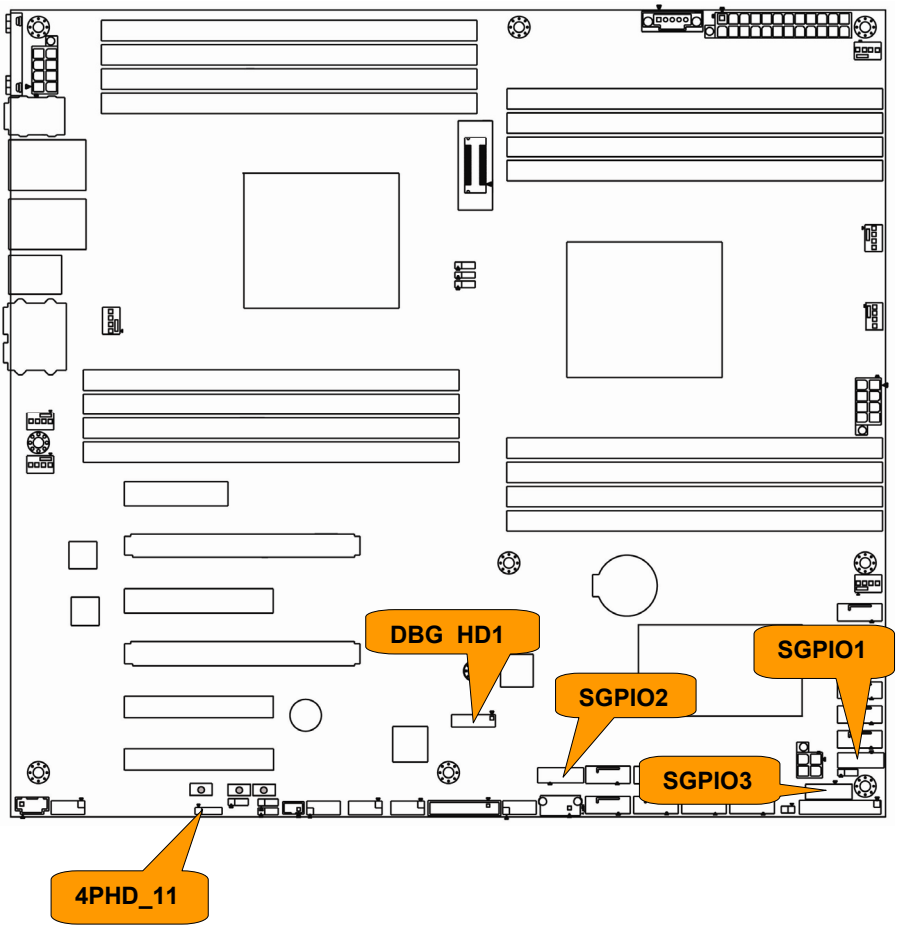
| Pin | 1 | 2 | 3 |
|---|---|---|---|
| Signal | NC | FM_ME_RCVR_N | GND |
| | 1-2: Normal Mode (Default) | | |
|  | 2-3: ME Recovery Mode | | |

### 3PHD_5: BIOS RECOVERY Jumper

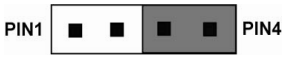
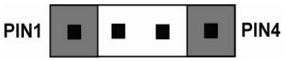
| Pin | 1 | 2 | 3 |
|---|---|---|---|
| Signal | NC | BIOS_RCVR_BOOT_N | GND |
| | 1-2: Normal Mode (Default) | | |
| | 2-3: BIOS Recovery mode | | |

### 3PHD_8: SECURITY OVERRIDE Jumper

| Pin | 1 | 2 | 3 |
|---|---|---|---|
| Signal | NC | MFG_MODE_N | GND |
| | 1-2: Normal Mode (Default) | | |
|  | 2-3: Security Override | | |


DBG_HD1
SGPIO1
SGPIO2
SGPIO3
4PHD_11

### 4PHD_11: BUZZER disable Jumper

| Pin | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Signal | VCC5 | NA | BUZ_1 | BUZ_2 |
|  | 1-2: Normal Mode (Default) | | | |
| | 2-3: Disable PC Beep | | | |
|  | 1-4: Use the external speaker | | | |

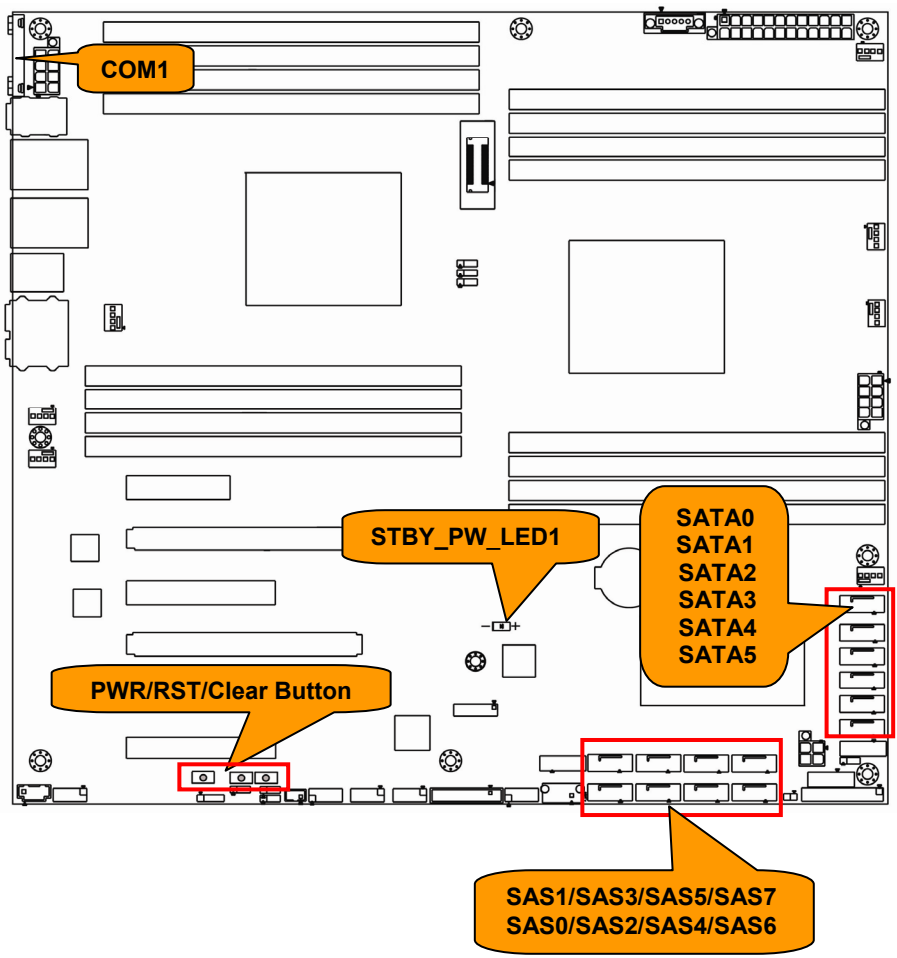
### SGPIO1/2/3: SATA SGPIO Header

| Signal | Pin | Pin | Signal |
|---|---|---|---|
| SCL | 1 | 2 | SDATA IN |
| SDA | 3 | 4 | SDATA OUT- |
| GND | 5 | 6 | SLOAD |
| KEY | 7 | 8 | SCLOCK |
| P3V3_AUX | 9 | 10 | HD_ERROR_LED |

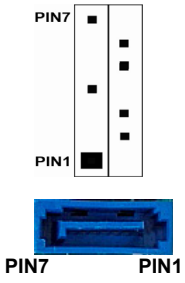
**NOTE:**
SGPIO1 is responsible for SATA port 0~5
SGPIO2 is responsible for SAS 0~3
SGPIO3 is responsible for SAS 4~7

### DBG_HD1: TYAN Module Header

| Signal | Pin | Pin | Signal |
|---|---|---|---|
| P3V3 | 1 | 2 | FRAME_N |
| LAD0 | 3 | 4 | KEY |
| LAD1 | 5 | 6 | PLT_RST_N |
| LAD2 | 7 | 8 | GND |
| LAD3 | 9 | 10 | CLK_33M |
| DBG_SERIRQ | 11 | 12 | GND |
| DBG_PRES_N | 13 | 14 | VCC3_AUX |
| ADDR_MB | 15 | 16 | PCH_PP_EN |


COM1
STBY_PW_LED1
SATA0
SATA1
SATA2
SATA3
SATA4
SATA5
PWR/RST/Clear Button
SAS1/SAS3/SAS5/SAS7
SAS0/SAS2/SAS4/SAS6

### SATA0/SATA1/SATA2/SATA3/SATA4/SATA5: SATA Connector

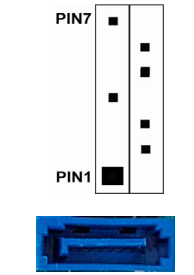



| | |
|---|---|
| 7 | GND |
| 6 | SATA RX DP |
| 5 | SATA RX DN |
| 4 | GND |
| 3 | SATA TX DN |
| 2 | SATA TX DP |
| 1 | GND |

Connects to the Serial ATA ready drives via the Serial ATA cable.

**SATA0/SATA1:**
Support SATA3.0
**SATA2/SATA3/SATA4/SATA5:**
Support SATA2.0

### SAS0~SAS7: SAS Connector




| | |
|---|---|
| 7 | GND |
| 6 | SATA RX DP |
| 5 | SATA RX DN |
| 4 | GND |
| 3 | SATA TX DN |
| 2 | SATA TX DP |
| 1 | GND |

Connects to the SATA ready drives via the SATA cable.

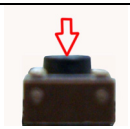
### SYTB_PW_LED1: Stby_PW_LED

| State | Color | Description |
|---|---|---|
| On | Green | System standby power identified |
| Off | Off | System standby power not identified |
| **NOTE:** The STBY_PW_LED will always be Green when attached with AC cable. | | |

**CLEAR BUTTON : Clear CMOS set**

| | |
|---|---|
| <br>Normal(Default) | You can reset the CMOS settings by using this button if you have forgotten your system/setup password or need to clear system BIOS setting.<br>- 1.Power off system and disconnect power connectors from the motherboard<br>- 2.Press the button (Clear CMOS)<br>- 3.Reconnect power & power on system<br>NOTE: After flashing new BIOS please follow the steps:<br>a. Clear CMOS<br>b. Enter BIOS setup menu and load Default Settings. Then do a Save and Exit from setup. |
| <br>Clear CMOS | |

**RST BUTTON : Reset system set**

| | |
|---|---|
| <br>Normal (Default) | Press the button to reset the system. |
|  <br>Reset system | |

## 2.4 - Installing the Processor

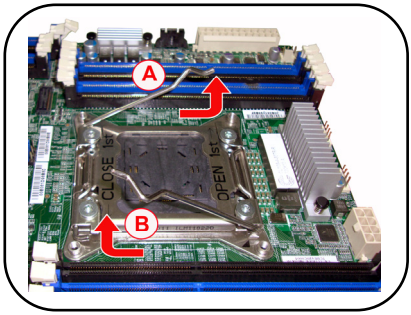
Your brand new S7065 motherboard, support both Intel® "Sandy Bridge-EP and Ivy Bridge series" processors. Please go to our website for the latest processor support. **http://www.tyan.com**

**NOTE:** TYAN® is not liable for damage as a result of operating an unsupported configuration.

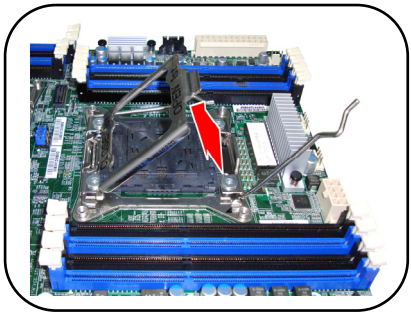
Locate the CPU socket (LGA 2011) on the motherboard:

To install a CPU:

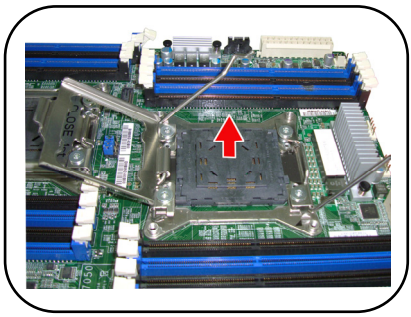
1. Press the load lever (A) hard with your thumb first, move it to the right. Then press the load lever(B) and move it to the right side until the load plate is released from the retention tab.



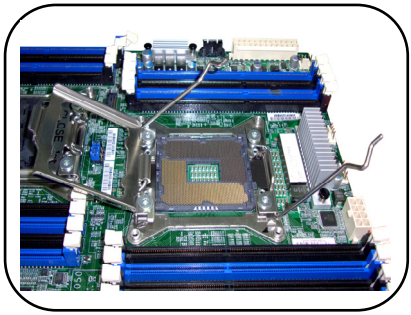

2. Lift the load plate in the direction of the arrow until it is fully opened.



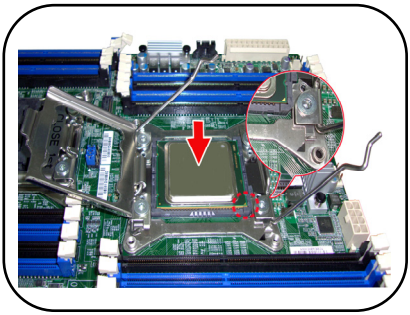
3. Remove the PnP cap from the CPU socket.



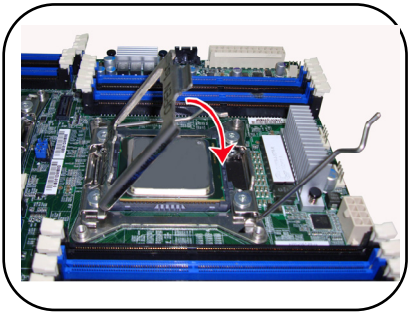
4. Please refer to the image.



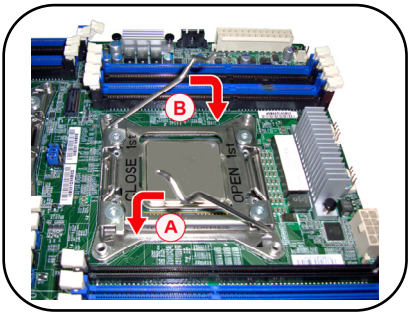
5. Position the CPU over the socket, ensuring that the gold triangle is on the bottom-right corner of the socket, and then fit the socket alignment keys into the CPU notches.

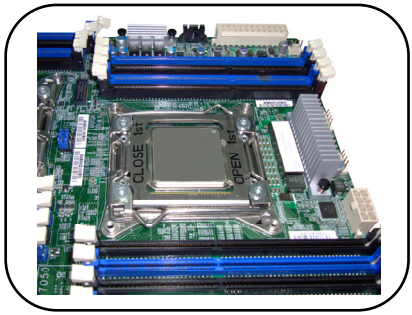


6. Close the load plate, ensuring that the front edge of the load plate slides under the retention lever.



7. Insert the load lever under the retention tab.






Cautions: The CPU fits in only one correct orientation. Do not force the CPU into the socket to prevent bending the connectors on the socket and damaging the CPU.

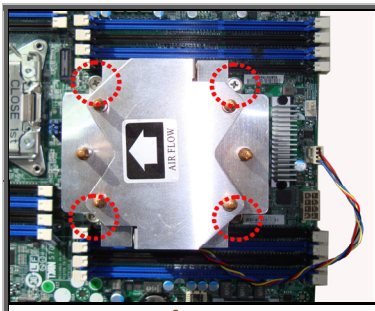
## 2.5 - Installing the Heatsink

**Heatsink Installation**

**Caution:** After installing the processor, you should proceed to install the heat sink. The CPU heat sink will ensure that the processor do not overheat and continue to operate at maximum performance for as long as you own them. The overheated processor is dangerous to the motherboard.

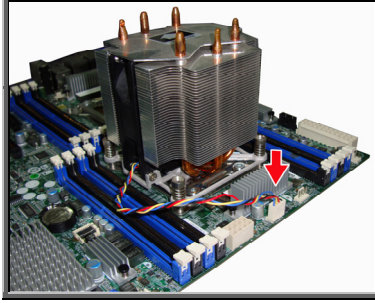
For the safest method of installation and information on choosing the appropriate heat sink, using heat sinks validated by Intel®. Please go to Intel' ®s website at www.Intel.com.

The following diagram illustrates how to install heat sink onto the CPU of S7065.




1. If a protective film covers the thermal interface material (TIM) on the underside of the heatsink, remove the protective film.

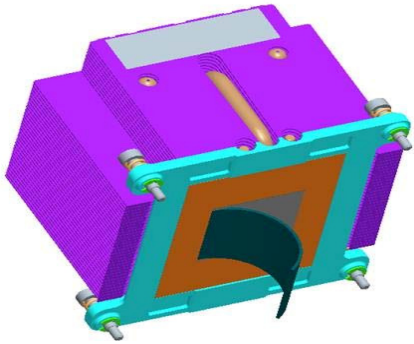
2. Each heatsink has four captive fasteners and should be tightened as shown



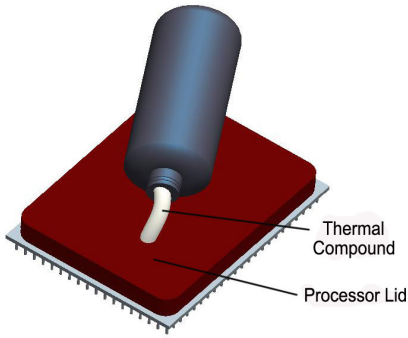
3. Attach fan power cable to server board as shown.

## 2.6 - Thermal Interface Material

There are two types of thermal interface materials designed for use with the processors.



The most common material comes as a small pad attached to the heat sink at the time of purchase. There should be a protective cover over the material. Take care not to touch this material. Simply remove the protective cover and place the heat sink on the processor.




The second type of interface material is usually packaged separately. It is commonly referred to as 'thermal compound'. Simply apply a thin layer on to the CPU lid (applying too much will actually reduce the cooling).

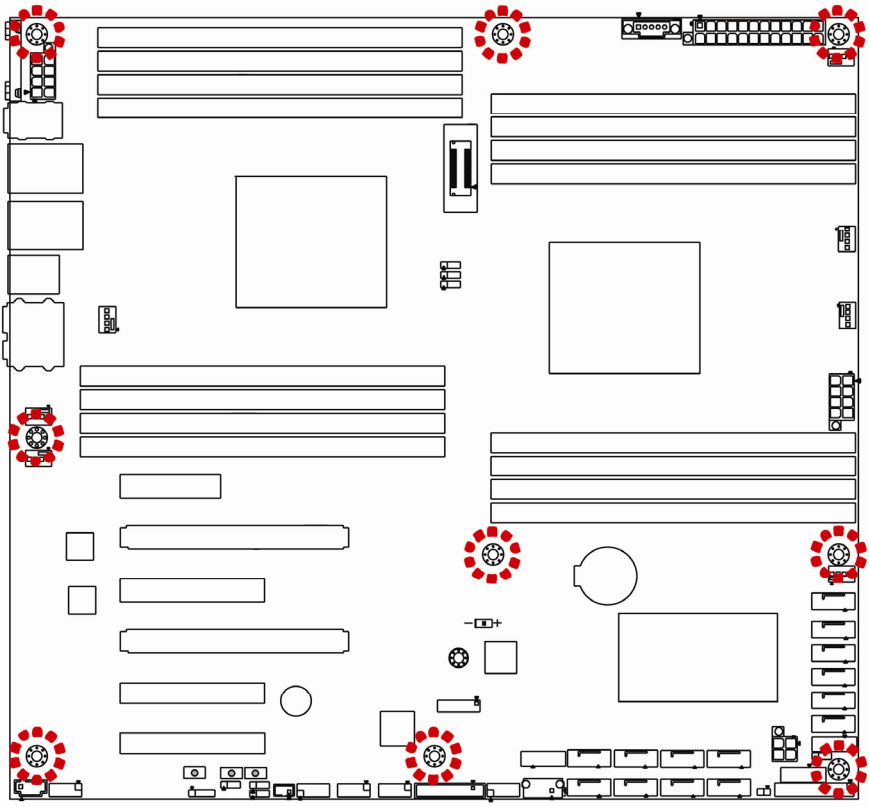
**NOTE:** Always check with the manufacturer of the heat sink & processor to ensure the thermal Interface material is compatible with the processor and meets the manufacturer's warranty requirements.

## 2.7 - Tips on Installing Motherboard in Chassis

Before installing your motherboard, make sure your chassis has the necessary motherboard support studs installed. These studs are usually metal and are gold in color. Usually, the chassis manufacturer will pre-install the support studs.

### Screw holes

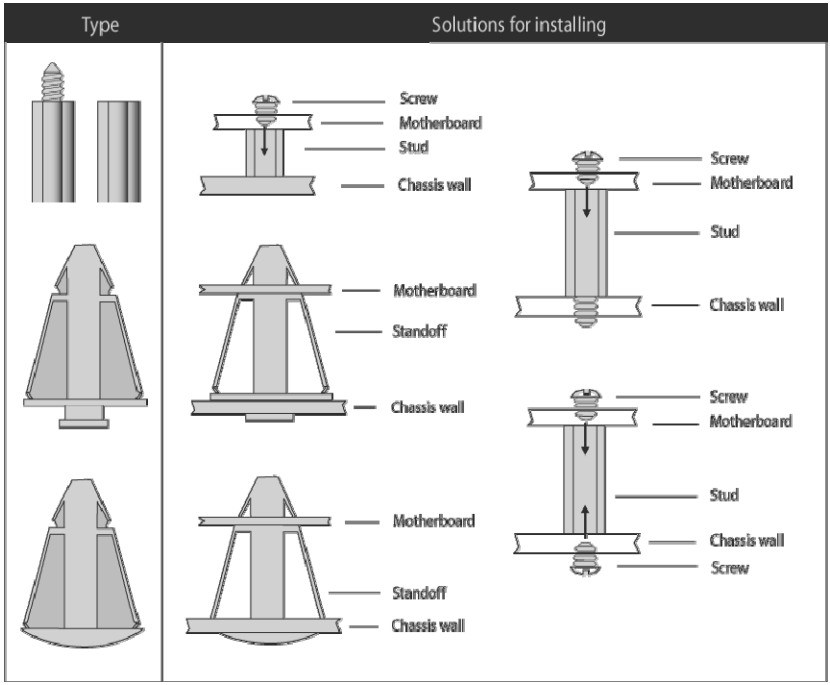
If you are unsure of stud placement, simply lay the motherboard inside the chassis and align the screw holes of the motherboard to the studs inside the case.
Place 9 screws into the holes indicated by circles to secure the mother board to the chassis.
**CAUTION:** DO NOT overtighten the screws! Doing so can damage the motherboard.



Some chassis' include plastic studs instead of metal. Although the plastic studs are usable, TYAN® recommends using metal studs with screws that will fasten the motherboard more securely in place.

Below is a chart detailing what the most common motherboard studs look like and how they should be installed.

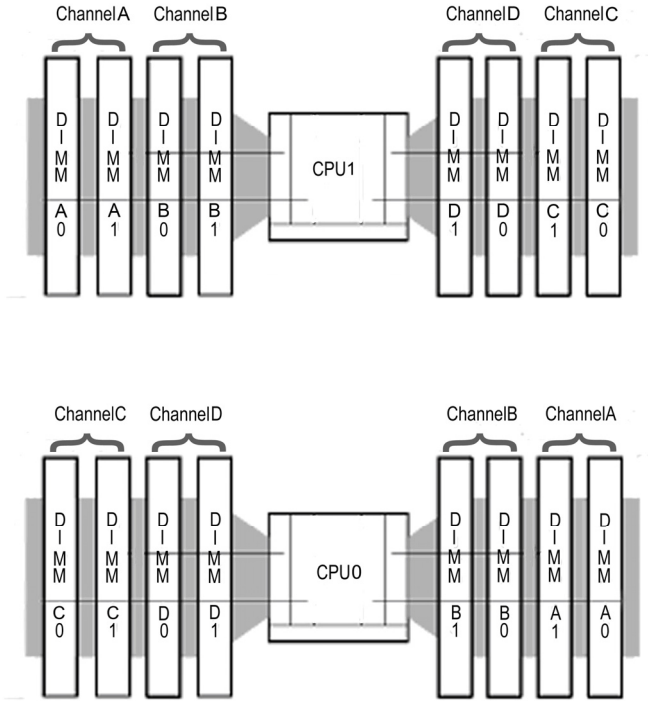
Mounting the Motherboard



## 2.8 - Installing the Memory

### Overview

The motherboard comes with four Double Data Rate 3（DDR3）Dual Inline Memory Modules （DIMM）sockets.
The figure illustrate the location of the DDR3 DIMM socket.




- Sandy Bridge-EP/EX processor supports 4 DDR3 channels
- Unbuffered DDR3 and registered DDR3 DIMMs
- LR DIMM (Load Reduced DIMM) for buffered memory solutions demanding higher capacity memory subsystems
- Memory DDR3 data transfer rates of 800, 1066, 1333, and 1600 MT/s
- All installed memory will automatically be detected and no jumpers or settings need changing.
- All memory must be of the same type and density.
- Always populate the memory starting from DIMMA0 first.

# Recommended Memory Population Table

To achieve the best performance, TYAN® strongly recommended memory installation configuration as listed below:

| | Single CPU Installed (CPU0 only) | | | | | | Dual CPU installed (CPU0 and CPU1) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Quantity of memory installed** | **1** | **2** | **3** | **4** | **6** | **8** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **10** | **12** | **14** | **16** |
| CPU0_DIMMD0 | | | | √ | √ | √ | | | | | | √ | √ | √ | √ | √ | √ |
| CPU0_DIMMD1 | | | | | | √ | | | | | | | | | √ | √ | √ |
| CPU0_DIMMC0 | | | √ | √ | √ | √ | | | | √ | √ | √ | √ | √ | √ | √ | √ |
| CPU0_DIMMC1 | | | | | | √ | | | | | | | | | √ | √ | √ |
| CPU0_DIMMB0 | | √ | √ | √ | √ | √ | | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| CPU0_DIMMB1 | | | | | √ | √ | | | | | | | | √ | √ | √ | √ |
| CPU0_DIMMA0 | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| CPU0_DIMMA1 | | | | | √ | √ | | | | | | | | √ | √ | √ | √ |
| CPU1_DIMMD0 | | | | | | | | | | | | | √ | √ | √ | √ | √ |
| CPU1_DIMMD1 | | | | | | | | | | | | | | | | | √ |
| CPU1_DIMMC0 | | | | | | | | | | | √ | √ | √ | √ | √ | √ | √ |
| CPU1_DIMMC1 | | | | | | | | | | | | | | | | | √ |
| CPU1_DIMMB0 | | | | | | | | | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| CPU1_DIMMB1 | | | | | | | | | | | | | | | | √ | √ |
| CPU1_DIMMA0 | | | | | | | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| CPU1_DIMMA1 | | | | | | | | | | | | | | | | √ | √ |

1. √ indicates a populated DIMM slot.
2. Paired memory installation for Max performance.
3. Populate the same DIMM type in each channel, specifically
   - Use the same DIMM size
   - Use the same # of ranks per DIMM
4. Dual-rank DIMMs are recommended over single-rank DIMMs
5. Un-buffered DIMM can offer slightly better performance than registerd DIMM if populating only a single DIMM per channel
6. We don't suggest other memory installation

### Intel®Xeon®processor E5-2600/4600 product families UDIMM Support

| Ranks Per DIMM & Data Width | Memory Capacity per DIMM | | | 1.35V | | 1.50V | |
|---|---|---|---|---|---|---|---|
| | | | | 1DPC | 2DPC | 1DPC | 2DPC |
| SRx8 Non-ECC | 1 GB | 2GB | 4GB | N/A | N/A | 1066, 1333 | 1066, 1333 |
| DRx8 Non-ECC | 2GB | 4GB | 8GB | N/A | N/A | 1066, 1333 | 1066, 1333 |
| SRx16 Non-ECC | 512 MB | 1GB | 2GB | N/A | N/A | 1066, 1333 | 1066, 1333 |
| SRx8 ECC | 1GB | 2GB | 4GB | 1066 | 1066 | 1066, 1333 | 1066, 1333 |
| DRx8 ECC | 2GB | 4GB | 8GB | 1066 | 1066 | 1066, 1333 | 1066, 1333 |

**NOTE 1:** The blue blocks indicate that the DRAM Densities are supported but not validated.
**NOTE 2:** The grey blocks indicate that the DRAM Densities are supported and validated.
**NOTE 3:** 1DPC => One dimm per channel
**NOTE 4:** 2DPC => Two dimm per channel

- Supported DRAM Densities are 1Gb, 2Gb and 4Gb. Only 2Gb and 4Gb are validated by Intel.
- Command Address Timing is 1N for 1DPC and 2N for 2DPC.
- Romley-EP/EX platform does not support 3DPC when using UDIMMs.

### Intel®Xeon®processor E5-2600/4600 product families LRDIMM Support

| Ranks Per DIMM & Data Width | Memory Capacity per DIMM | | 1.35V | | 1.50V | |
|---|---|---|---|---|---|---|
| | | | 1DPC | 2DPC | 1DPC | 2DPC |
| QRx4 (DDP) | 16GB | 32GB | 1066 | 1066 | 1066, 1333 | 1066, 1333 |
| QRx8 (P) | 8GB | 16GB | 1066 | 1066 | 1066, 1333 | 1066, 1333 |

**NOTE:** The blue blocks indicate that the DRAM Densities are supported and not validated.

- Physical Rank is used to calculate DIMM Capacity.
- Supported and validated DRAM Densities are 2Gb and 4Gb.
- Command Address Timing is 1N.
- The speeds are estimated targets and will be verified through simulation.
- For 3SPC/3DPC -Rank Multiplication (RM) >= 2.
- DDP -Dual Die Package DRAM stacking. P –Planer monolithic DRAM Die.
- Romley-EP/EX platform does not support 3DPC when using E5-2400 LRDIMMs.

**Intel®Xeon®processor E5-2600/4600 product families RDIMM Support**

| Ranks Per DIMM & Data Width | Memory Capacity per DIMM | | | 1.35V | | 1.50V | |
|---|---|---|---|---|---|---|---|
| | | | | 1DPC | 2DPC | 1DPC | 2DPC |
| SRx8 | 1GB | 2GB | 4GB | 1066, 1333 | 1066, 1333 | 1066, 1333, 1600 | 1066, 1333, 1600 |
| DRx8 | 2GB | 4GB | 8GB | 1066, 1333 | 1066, 1333 | 1066, 1333, 1600 | 1066, 1333, 1600 |
| SRx4 | 2GB | 4GB | 8GB | 1066, 1333 | 1066, 1333 | 1066, 1333, 1600 | 1066, 1333, 1600 |
| DRx4 | 4GB | 8GB | 16GB | 1066, 1333 | 1066, 1333 | 1066, 1333, 1600 | 1066, 1333, 1600 |
| QRx4 | 8GB | 16GB | 32GB | 800 | 800 | 1066 | 800 |
| QRx8 | 4GB | 8GB | 16GB | 800 | 800 | 1066 | 800 |

**NOTE 1:** The blue blocks indicate that the DRAM Densities are supported but not validated.

**NOTE 2:** The grey blocks indicate that the DRAM Densities are supported and validated.

**NOTE 3:** The yellow blocks indicate that the DRAM Densities are supported with limited validated.

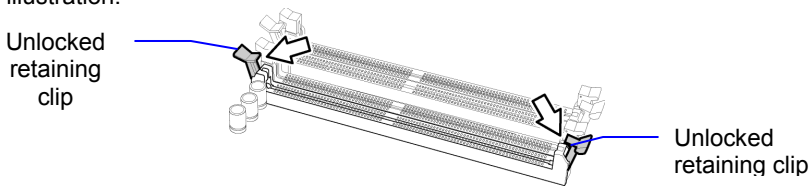
- Supported DRAM Densities are 1Gb, 2Gb and 4Gb. Only 2Gb and 4Gb are validated by Intel.
- Command Address Timing is 1N.
- QR RDIMM are supported but not validated by Intel/PMO in a homogenous environment. The coverage will have limited system level testing, no signal integrity testing, and no interoperability testing. The passing QR RDIMMs will be web posted.

## Memory Installation Procedure

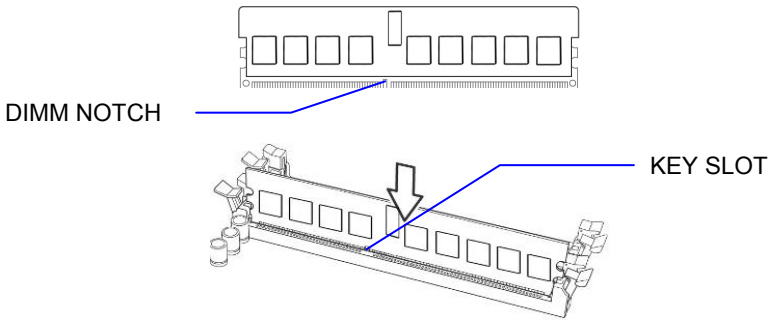
> Caution: Ensure to unplug the power supply before adding or removing DIMMs, or other system components, Failure to do so may cause severe damage to both the motherboard and the components.

Follow these instructions to install memory modules into the S7065.

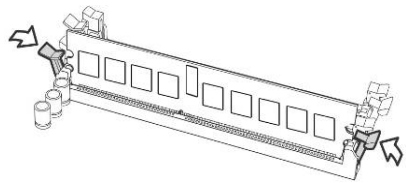
1. Unlock a DIMM socket by Press the retaining clip outwardly in the following illustration.




2. Align the memory module with the socket，such that the DIMM NOTCH match the KEY SLOT on the socket.




3. Hold the DIMM by both of its ends. Insert the module vertically into the socket . Apply force to both ends of the DIMM simultaneously until the retaining clip pop up into place. And the DIMM cannot be pushed in any further to ensure proper sitting of the DIMM.

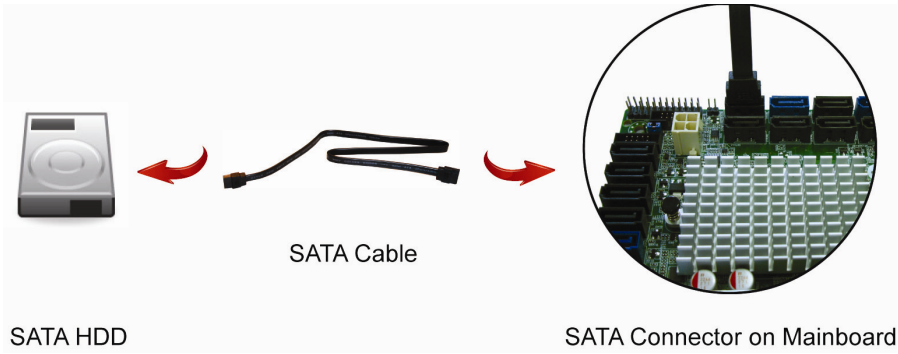


## 2.9 - Attaching Drive Cables

S7065 is equipped with **6** Serial ATA (SATA) channels.  Connections for the drives are very simple. There is no need to set Master/Slave jumpers on SATA drives. distributor.

**Attaching Serial ATA Cables**

The following illustrates how to make a SATA Cable connection. If you are in need of SATA/SAS cables or power adapters please contact your local sales representative.



## 2.10 - Installing Add-In Cards

Before installing add-in cards, it's helpful to know if they are fully compatible with your motherboard. For this reason, we've provided the diagrams below, showing the slots that may appear on your motherboard.

**PCI-E Gen3 x 16 slot**

**PCI-E Gen3 x 8 slot**

**PCI-E Gen3 x 4 slot**

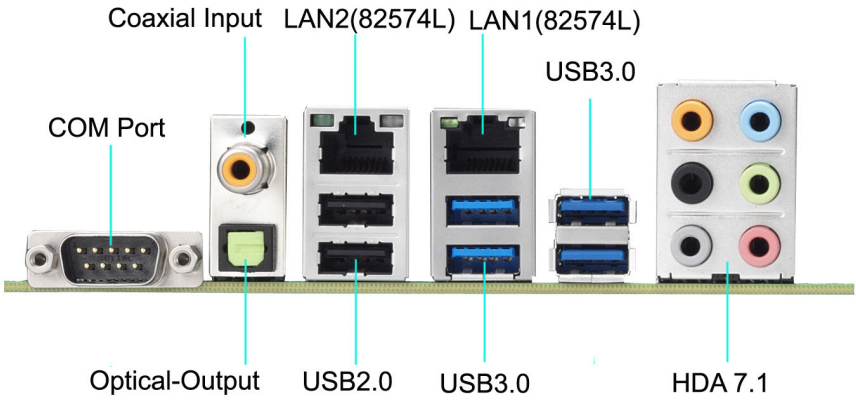
Simply find the appropriate slot for your add-in card and insert the card firmly. Do not force any add-in cards into any slots if they do not seat in place. It is better to try another slot or return the faulty card rather than damaging both the motherboard and the add-in card.

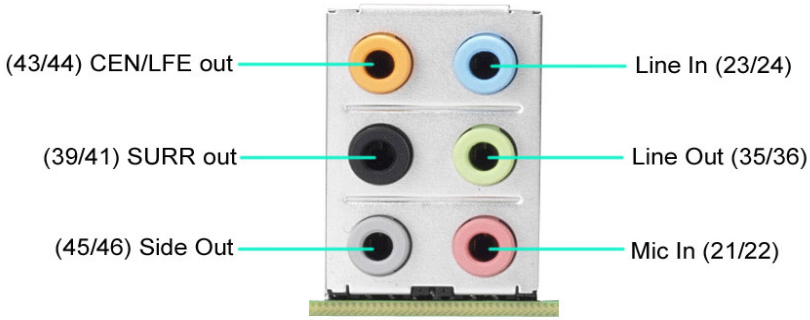
**TIP:** It's good practice to install add-in cards in a staggered manner rather than making them directly adjacent to each other. Doing so allows air to circulate within the chassis more easily, thus improving cooling for all installed devices.

NOTE: YOU MUST ALWAYS unplug the power connector to the motherboard before performing system hardware changes to avoid damaging the board or expansion device.

## 2.11 - Connecting External Devices

Your motherboard supports a number of different interfaces through connecting peripherals. See the following diagrams for the details.



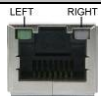




HDA 7.1 Rear Panel PhonJack

NOTE: Peripheral devices can be plugged straight into any of these ports but software may be required to complete the installation.

### Onboard LAN LED Color Definition

The Two onboard Ethernet ports have green and amber LEDs to indicate LAN status. The chart below illustrates the different LED states.

| 10/100/1000 Mbps LAN Link/Activity LED Scheme | | | |
|---|---|---|---|
|  | | **Left LED (Link/Activity)** | **Right LED (Speed)** |
| **10 Mbps** | **Link** | Green | Off |
| | **Active** | Blinking Green | Off |
| **100 Mbps** | **Link** | Green | Solid Green |
| | **Active** | Blinking Green | Solid Green |
| **1000 Mbps** | **Link** | Green | Solid Yellow |
| | **Active** | Blinking Green | Solid Yellow |
| **No Link** | | Off | Off |

## 2.12- Installing the Power Supply

There are **four (4)** power connectors on your S7065. It is required that you have an EPS12V power supply has one 24-pin and two 8-pin connectors.

**PW1: 24-Pin 12V main PWR Connector**

| Signal | Pin | Pin | Signal |
|---|---|---|---|
| +3.3V | 1 | 13 | +3.3V |
| +3.3V | 2 | 14 | -12V |
| GND | 3 | 15 | GND |
| +5V | 4 | 16 | PS_ON# |
| GND | 5 | 17 | GND |
| +5V | 6 | 18 | GND |
| GND | 7 | 19 | GND |
| PWR OK | 8 | 20 | Reserve |
| 5VSB | 9 | 21 | +5V |
| +12V | 10 | 22 | +5V |
| +12V | 11 | 23 | +5V |
| +3.3V | 12 | 24 | GND |

**PW2: 8-Pin PWR Connector**

| Signal | Pin | Pin | Signal |
|---|---|---|---|
| GND | 1 | 2 | GND |
| GND | 3 | 4 | GND |
| P12V_CPU0 | 5 | 6 | P12V_CPU0 |
| P12V_DDR3_CPU0 | 7 | 8 | P12V_DDR3_CPU0 |

**PW3: 8-Pin PWR Connector**

| Signal | Pin | Pin | Signal |
|---|---|---|---|
| GND | 1 | 2 | GND |
| GND | 3 | 4 | GND |
| P12V_CPU1 | 5 | 6 | P12V_CPU1 |
| P12V_DDR3_CPU1 | 7 | 8 | P12V_DDR3_CPU1 |

**PW4: 4-Pin PW Connector**

| Signal | Pin | Pin | Signal |
|---|---|---|---|
| GND | 1 | 2 | GND |
| +12V | 3 | 4 | +12V |

NOTE: The PW4 is reserved for PCIE slot 12V supplement if the PCIE card and the MB FAN's 12V power consumption exceed the maximum 12V out of PSU's PW1.

**NOTE:** YOU MUST unplug the power supply before plugging the power cables to motherboard connectors.

## 2.13 - Finishing Up

Congratulations on making it this far! You're finished setting up the hardware aspects of your computer. Before closing up your chassis, make sure that all cables and wires are connected properly, especially power cables and most importantly jumpers. You may have difficulty powering on your system if the motherboard jumpers are not set correctly. In the rare circumstance that you have experienced difficulty, you can find help by asking your vendor for assistance. If they are not available for assistance, please find setup information and documentation online at our website or by calling your vendor's support line.

# Chapter 3: BIOS Setup

## 3.1 - About the BIOS

The BIOS is the basic input/output system, the firmware on the motherboard that enables your hardware to interface with your software. The BIOS determines what a computer can do without accessing programs from a disk. The BIOS contains all the code required to control the keyboard, display screen, disk drives, serial communications, and a number of miscellaneous functions. This chapter describes the various BIOS settings that can be used to configure your system.

The BIOS section of this manual is subject to change without notice and is provided for reference purposes only. The settings and configurations of the BIOS are current at the time of print and are subject to change, and therefore may not match exactly what is displayed on screen.
This section describes the BIOS setup program. The setup program lets you modify basic configuration settings. The settings are then stored in a dedicated, battery-backed memory (called NVRAM) that retains the information even when the power is turned off.

**To start the BIOS setup utility:**
**1. Turn on or reboot your system.**
**2. Press <Del> during POST (<Tab> on remote console) to start the BIOS setup utility.**

## 3.2 - Setup Basics

The table below shows how to navigate in the setup program using the keyboard.

| Key | Function |
|---|---|
| <F1> | General help window |
| <ESC> | Exit current menu |
| ← → arrow keys | Select a different menu |
| ↑ or ↓ arrow keys | Move cursor up/down |
| <Tab> / <Shift-Tab> | Cycle cursor up/down |
| <Home> / <End> | Move cursor to top/bottom of the window |
| <PgUp> / <PgDn> | Move cursor to next/previous page |
| <-> | Select the previous value/setting of the field |
| <+> | Select the next value/setting of the field |
| <F8> | Load Fail Safe default configuration values of the menu |
| <F3> | Load the Optimal default configuration values of the menu |
| <F4> | Save and exit |
| <Enter> | Execute command or select submenu |

## 3.3 - Getting Help

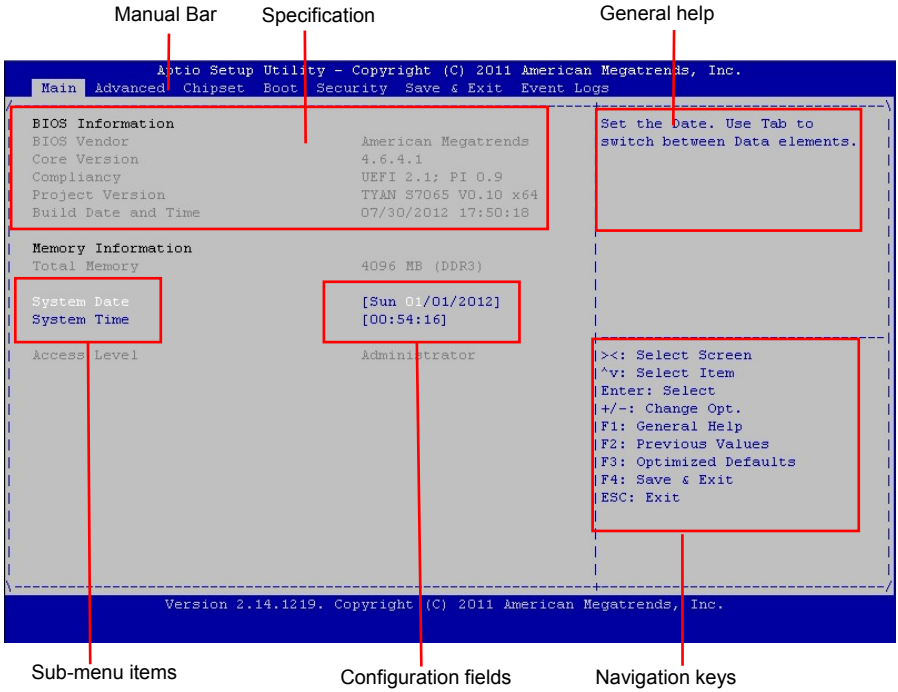
Pressing [F1] will display a small help window that describes the appropriate keys to use and the possible selections for the highlighted item. To exit the Help Window, press [ESC].

## 3.4 - In Case of Problems

If you have trouble booting your computer after making and saving the changes with the BIOS setup program, you can restart the computer by holding the power button down until the computer shuts off (usually within 4 seconds); resetting by pressing CTRL-ALT-DEL; or clearing the CMOS. The best advice is to only alter settings that you thoroughly understand. In particular, do not change settings in the Chipset section unless you are absolutely sure of what you are doing. The Chipset defaults have been carefully chosen either by TYAN® or your system manufacturer for best performance and reliability. Even a seemingly small change to the Chipset setup options may cause the system to become unstable or unusable.

**NOTE:** The following pages provide the details of BIOS menu. Please be noticed that the BIOS menu are continually changing due to the BIOS updating. The BIOS menu provided are the most updated when this manual is written. Please visit TYAN®'s website at http://www.TYAN.com for the information of BIOS updating.

## 3.5 - BIOS Main Menu




**BIOS Information**
Displays BIOS related information.

**Memory Information**
Displays total memory size.

**System Date (Day dd/mm/yyyy)**
System Time (hh:mm:ss)

Allow user to set system time and date.

The Time is displayed in 24 hours format.
The Date can be set from January 1st, 2005 to December 31, 2099
The values set in these two fields take effect immediately.

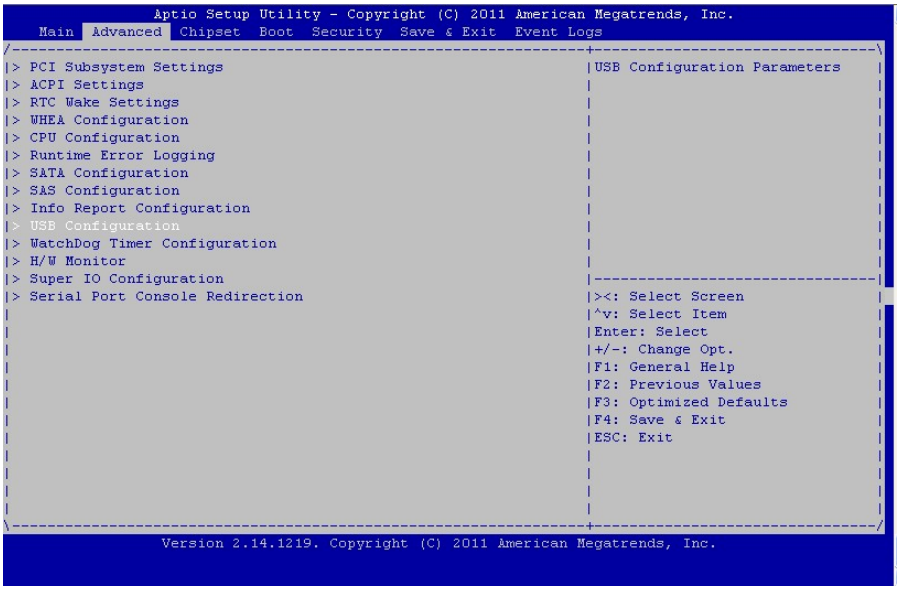
### 3.5.1 Manual Bars

| | |
|---|---|
| Main | For changing the basic system configuration |
| Advanced | For changing the advanced system settings |
| Chipset | For customize the Intel chipset function |
| Boot | For changing the system boot configuration |
| Security | For setting the Supervisor and User passwords |
| Server Mgmt | For changing the server management |
| Event Logs | For record the system Event Logs |
| Save & Exit | For selecting the exit options and loading default settings |

NOTE: The Main BIOS Menu is the first screen that you can navigate which has two main frames. The left frame displays all the options that can be configured. "Grayed-out" options cannot be configured, options in blue can be changed. The right frame displays the key legend. Above the key legend is an area reserved for a text message. When an option is selected in the left frame, it is highlighted in white. Often, a text message will accompany it.

## 3.6 - BIOS Advanced Menu

This section facilitates configuring advanced BIOS options for your system.


Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
Main Advanced Chipset Boot Security Save & Exit Event Logs
> PCI Subsystem Settings
> ACPI Settings
> RTC Wake Settings
> WHEA Configuration
> CPU Configuration
> Runtime Error Logging
> SATA Configuration
> SAS Configuration
> Info Report Configuration
> USB Configuration
> WatchDog Timer Configuration
> H/W Monitor
> Super IO Configuration
> Serial Port Console Redirection
USB Configuration Parameters
><: Select Screen
^v: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.

**PCI Subsystem Settings**
PCI,PCI-X and PCI Express Configuration.

**ACPI Settings**
Selection for Advanced ACPI Configuration.

**RTC Wake Settings**
Selection for RTC Wake Configuration.

**WHEA Configuration**
General WHEA Configuration Setting.

**CPU Configuration**
CPU Configuration Parameters.

**Runtime Error Logging**
Runtime Error Logging Support Setup Options

**SATA Configuration**
This menu helps you to set up or change the SATA Configuration.

**SAS Configuration**
SAS Devices Configuration.

**Info Report Configuration**
Info report configure

**USB Configuration**
Configure the USB support

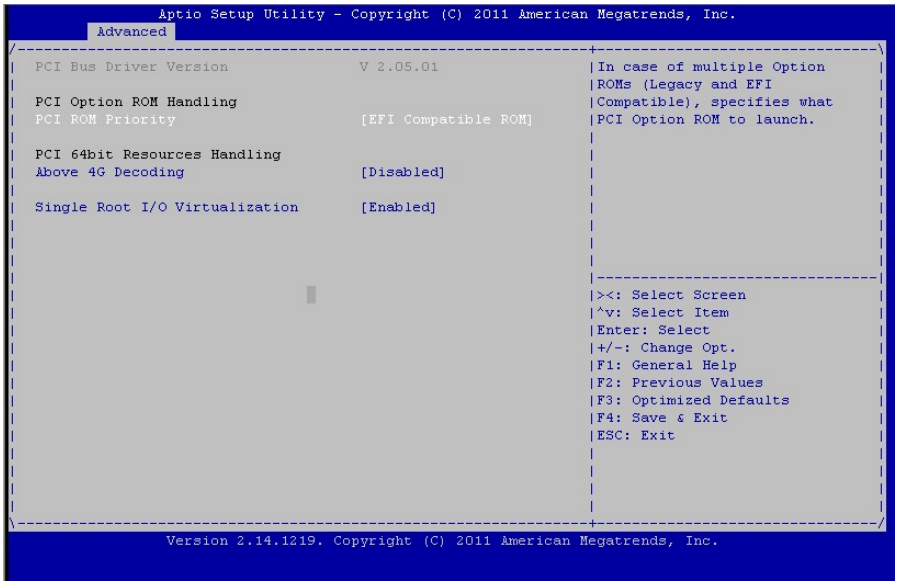
**Watchdog Timer Configuration**
Configure watchdog Timer

**H/W Monitor Configuration**
IPMI configuration including server monitoring and event log

**Super IO Configuration**
Configures Super IO

**Serial Port Console Redirection**
Redirect Serial Port Console

### 3.6.1 - PCI Setting

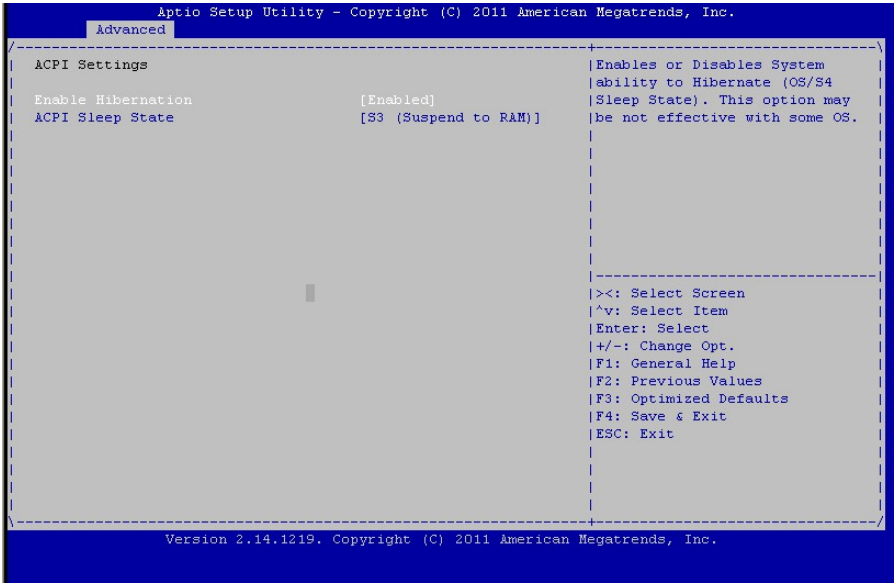

Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
Advanced
PCI Bus Driver Version
V 2.05.01
PCI Option ROM Handling
PCI ROM Priority
[EFI Compatible ROM]
PCI 64bit Resources Handling
Above 4G Decoding
[Disabled]
Single Root I/O Virtualization
[Enabled]
In case of multiple Option ROMs (Legacy and EFI Compatible), specifies what PCI Option ROM to launch.
><: Select Screen
^v: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.

**PCI Option ROM Handling**
**PCI ROM Priority**
In case of multiple option ROMs (Legacy and EFI compatible)， specifies what PCI option ROM to launch.
[EFI Compatible ROM] / [Legacy ROM]
Default is [EFI Compatible ROM]

**PCI 64bit Resources Handling**
**Above 4G Decoding**
Enables or disables 64 bit capable devices to be decoded in above 4G address space(only if system supports 64 bit PCI decoding.
[Disabled] / [Enabled]
Default is [Disabled]

**Single Root I/O Virtualization**
Enable or disable single Root I/O virtualization
[Disabled] / [Enabled]
Default is [Enabled]

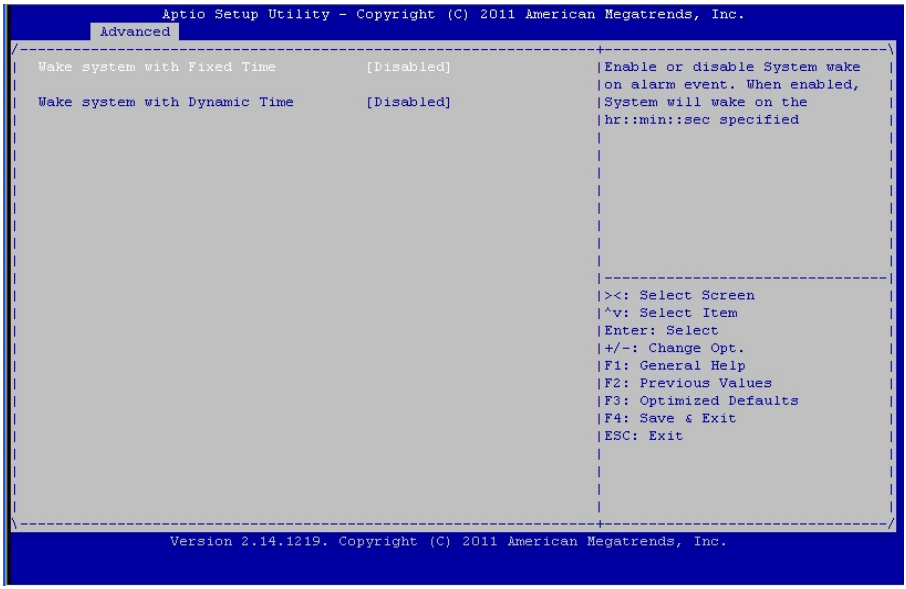
### 3.6.2 - ACPI Setting


Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
Advanced
ACPI Settings
Enable Hibernation
[Enabled]
ACPI Sleep State
[S3 (Suspend to RAM)]
Enables or Disables System ability to Hibernate (OS/S4 Sleep State). This option may be not effective with some OS.
><: Select Screen
^v: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.

**Enable Hibernation**
Enables or disables System ability to Hibernate (OS/S4 sleep state). This option may be not effective with some OS.
[Disabled] / [Enabled]
Default is [Enabled]

**ACPI Sleep State**
Select the highest ACPI sleep state the system will enter when the suspend button is pressed.
[Suspend Disabled] / [S1(CPU Stop Clock)] / [S3(suspend to RAM)]
Default is [S3(suspend to RAM)]

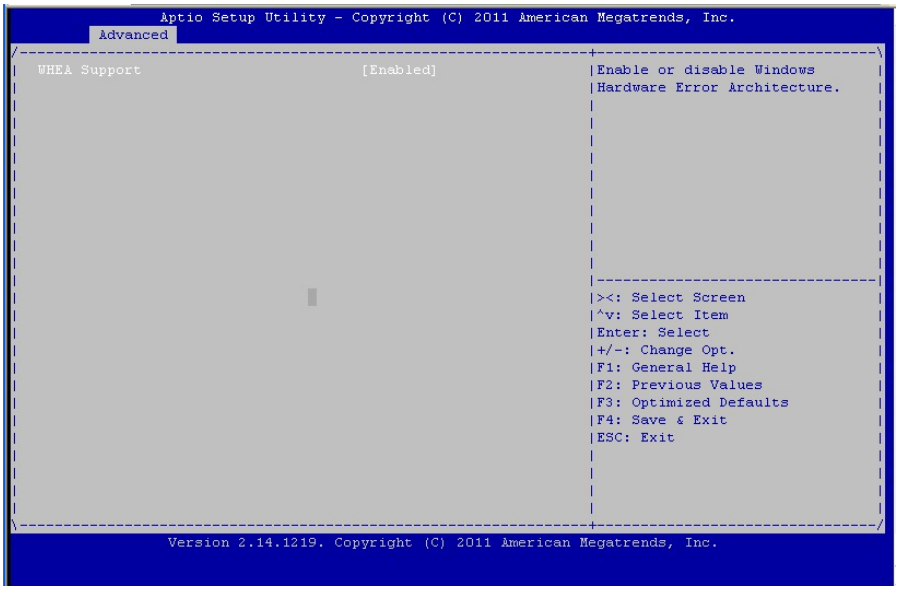
### 3.6.3 – Wake system Configuration


Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
Advanced
Wake system with Fixed Time [Disabled]
Wake system with Dynamic Time [Disabled]
Enable or disable System wake on alarm event. When enabled, System will wake on the hr::min::sec specified
><: Select Screen
^v: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.

**Wake system with Fixed Time**
Enable or disable system wake on alarm event. When enabled, system will wake on the hr :: min :: sec specified
[Disabled] / [Enabled]
Default is [Disabled]

**Wake system with Dynamic Time**
Enable or disable system wake on alarm event. When enabled, system will wake on the hr :: min :: sec specified
[Disabled] / [Enabled]
Default is [Disabled]

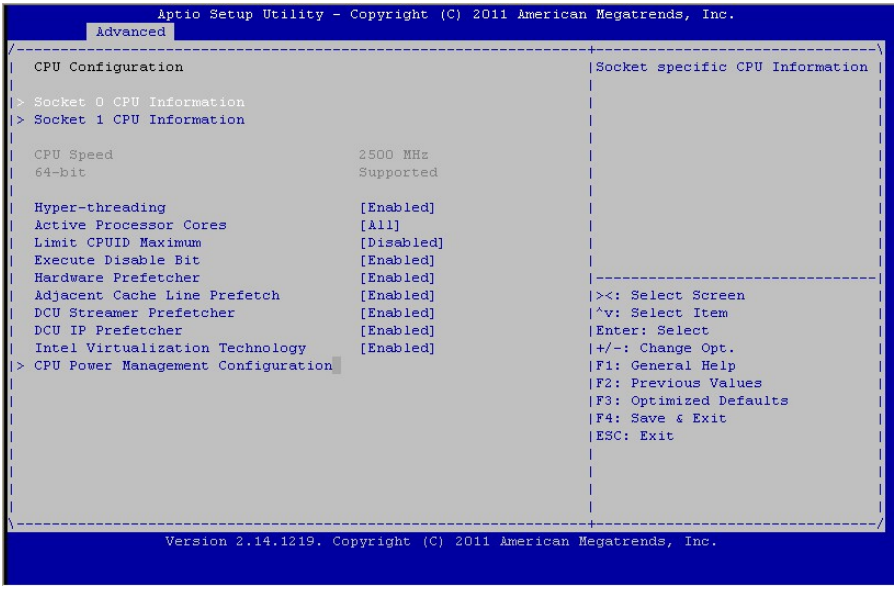
### 3.6.4 - WHEA Support




**WHEA Support**
Enables or disables Windows Hardware Error Architecture.
[Disabled] / [Enabled]
Default is [Enabled]

### 3.6.5 - CPU Configuration

This section allows you to fine-tune the processor options.




**Hyper- threading**

This option enable for Windows XP and Linux (OS optimized for Hyper- threading Technology.

And Disabled for other (OS not optimized for Hyper-threading Technology).

[Disabled] / [Enabled]

Default is [Enabled]

**Active Processor Core**

[All]/[1]/[2]/[3]/[4]/[5]/[6]/[7]

Default is [All]

**Limit CPUID Maximum**

[Disabled] / [Enabled]

Default is [Disabled]

**Execute Disable Bit**

[Disabled] / [Enabled]

Default is [Enabled]

**Hardware Prefetcher**

[Disabled] / [Enabled]

Default is [Enabled]

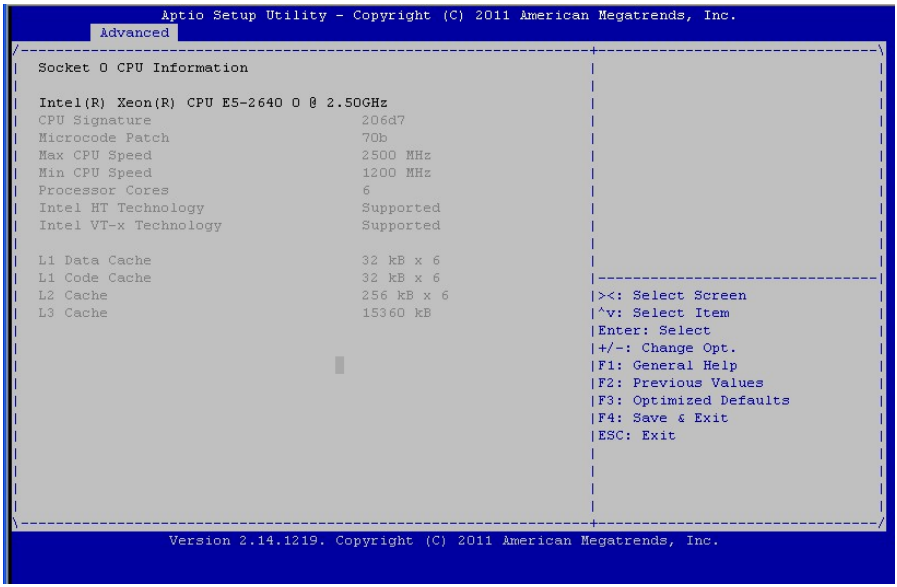
**Adjacent Cache Line Prefetch**
[Disabled] / [Enabled]
Default is [Enabled]

**DCU Streamer Prefetcher**
Enable prefetch of next L1 Data line based upon multiple loads in same cache line.
[Disabled] / [Enabled]
Default is [Enabled]

**DCU IP Prefetcher**
Enable prefetch of next L1 line based upon sequential load history.
[Disabled] / [Enabled]
Default is [Enabled]

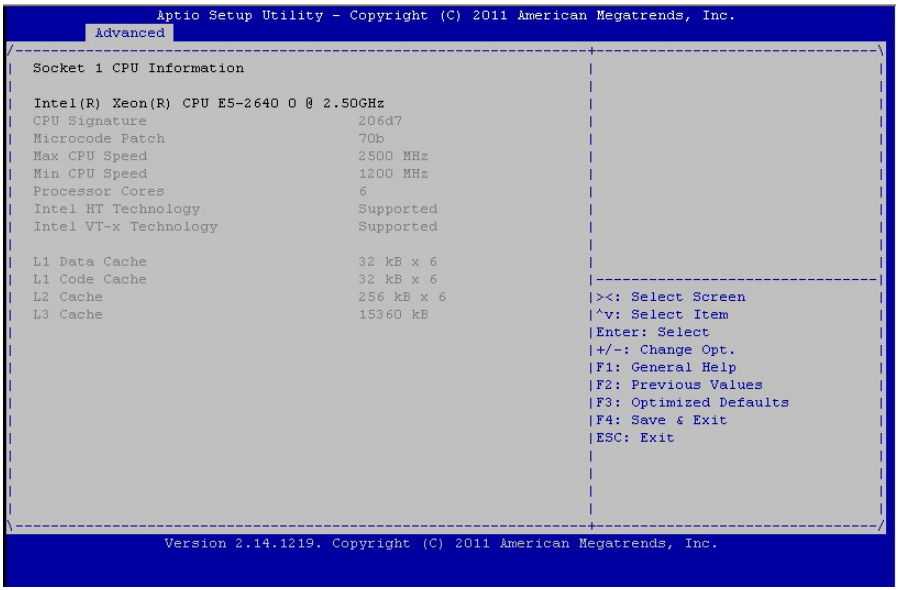
**Intel Virtualization Technology**
When enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.
**NOTE:** Once the lock bit is set, the contents of this register can not be modified until S5 reset occurs.
[Disabled] / [Enabled]
Default is [Enabled]

### 3.6.5.1 – Socket0 CPU Configuration


Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
Advanced
Socket 0 CPU Information
Intel(R) Xeon(R) CPU E5-2640 0 @ 2.50GHz
CPU Signature 206d7
Microcode Patch 70b
Max CPU Speed 2500 MHz
Min CPU Speed 1200 MHz
Processor Cores 6
Intel HT Technology Supported
Intel VT-x Technology Supported
L1 Data Cache 32 kB x 6
L1 Code Cache 32 kB x 6
L2 Cache 256 kB x 6
L3 Cache 15360 kB
><: Select Screen
^v: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.

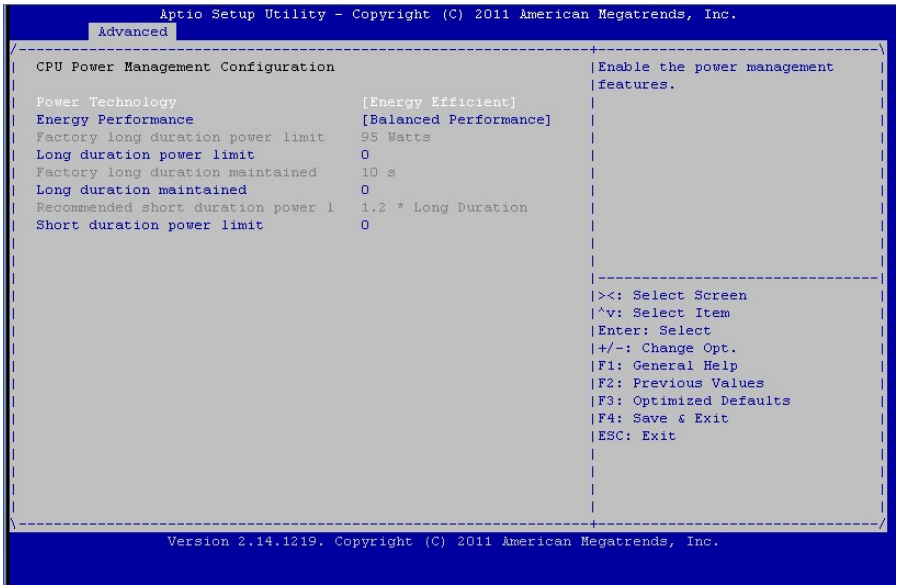
Read only

### 3.6.5.2 – Socket1 CPU Configuration


Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
Advanced
Socket 1 CPU Information
Intel(R) Xeon(R) CPU E5-2640 0 @ 2.50GHz
CPU Signature 206d7
Microcode Patch 70b
Max CPU Speed 2500 MHz
Min CPU Speed 1200 MHz
Processor Cores 6
Intel HT Technology Supported
Intel VT-x Technology Supported
L1 Data Cache 32 kB x 6
L1 Code Cache 32 kB x 6
L2 Cache 256 kB x 6
L3 Cache 15360 kB
><: Select Screen
^v: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.

Read Only

### 3.6.5.3 - CPU Power Management Configuration


Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
Advanced
CPU Power Management Configuration
Power Technology [Energy Efficient]
Energy Performance [Balanced Performance]
Factory long duration power limit 95 Watts
Long duration power limit 0
Factory long duration maintained 10 s
Long duration maintained 0
Recommended short duration power l 1.2 * Long Duration
Short duration power limit 0
Enable the power management features.
><: Select Screen
^v: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.

**Power Technology**
Enable the power management features.
[Disable] / [Energy Efficient] / [Custom]
Default is [Energy Efficient]

**Energy Performance**
Optimize between Performance and power savings. Windows 2008 and later OSes overrides this value according to its power plan.
[Performance] / [Balanced Performance] / [Balanced Energy]
Default is [Balanced Performance]

**Factory Long Duration**
Read only.

**Long Duration power**
Time window which the long duration power is maintained.

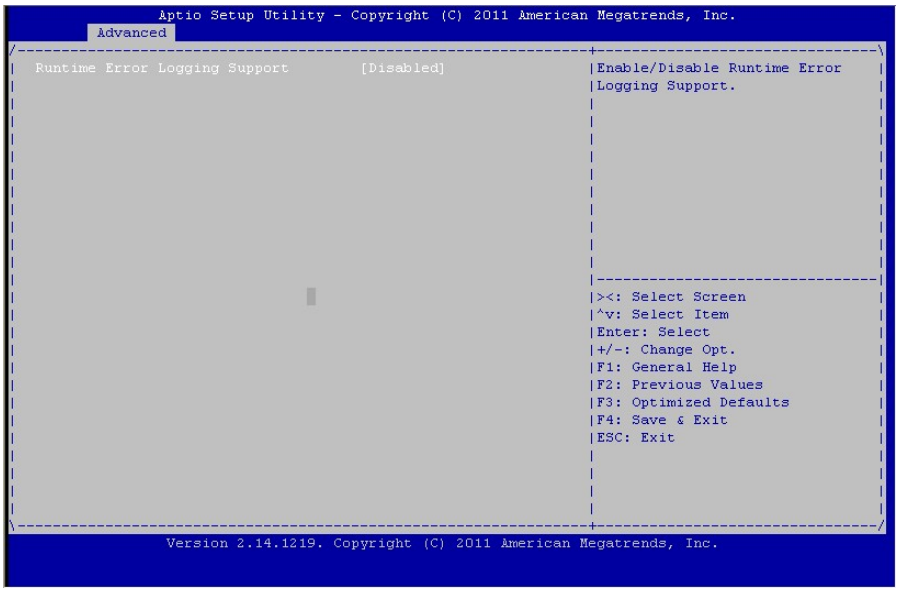
**Factory Long Duration**
Read only.

**Long Duration Maintained**
Time window which the long duration power is maintained.

**Recommended short duration power limit**
Read only.

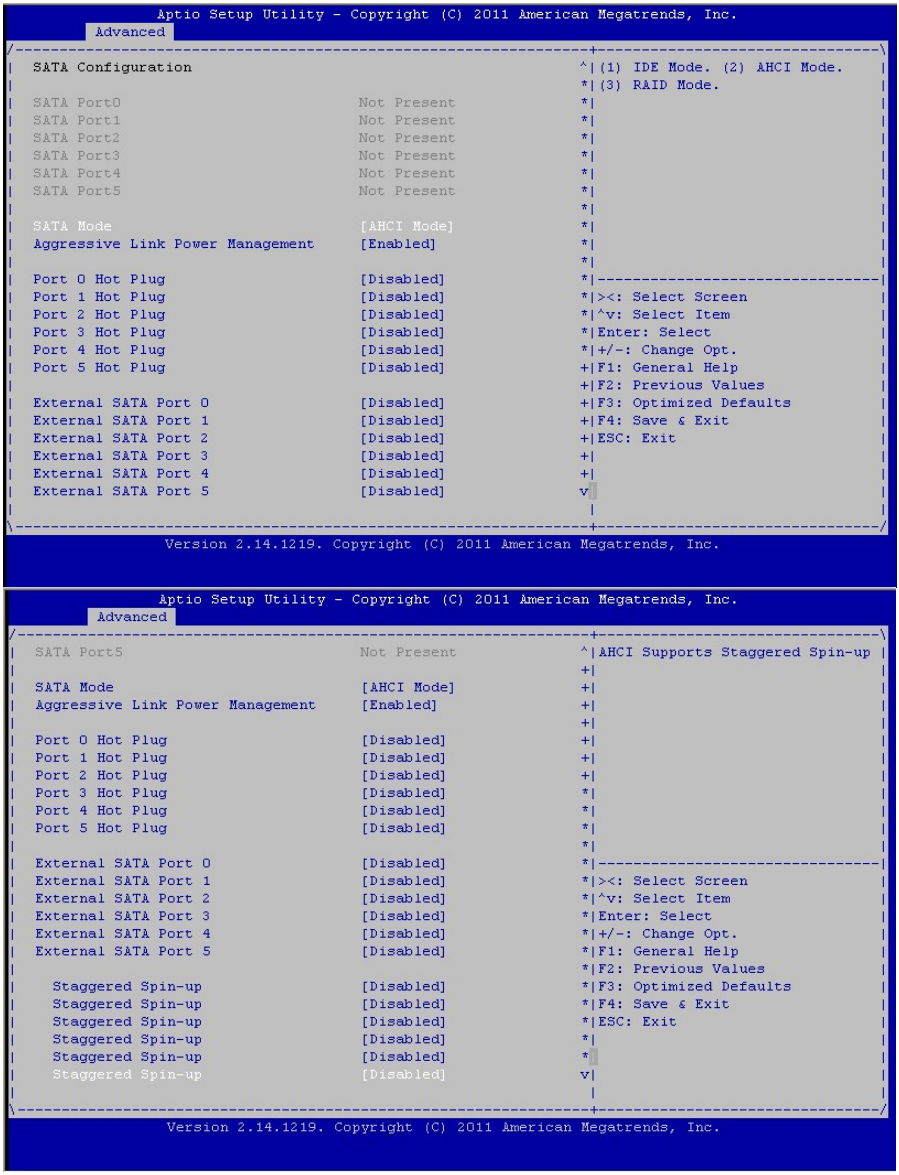
**Short duration power limit**
Short duration power limit in Watts.

## 3.6.6 – Runtime Error Logging Configuration




**Runtime Error Logging Support**
Enable/Disable Runtime Error Logging Support.
[Enabled] / [Disabled]
Default is [Disabled]

## 3.6.7 - SATA Configuration


Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
Advanced
SATA Configuration
SATA Port0 Not Present
SATA Port1 Not Present
SATA Port2 Not Present
SATA Port3 Not Present
SATA Port4 Not Present
SATA Port5 Not Present
SATA Mode [AHCI Mode]
Aggressive Link Power Management [Enabled]
Port 0 Hot Plug [Disabled]
Port 1 Hot Plug [Disabled]
Port 2 Hot Plug [Disabled]
Port 3 Hot Plug [Disabled]
Port 4 Hot Plug [Disabled]
Port 5 Hot Plug [Disabled]
External SATA Port 0 [Disabled]
External SATA Port 1 [Disabled]
External SATA Port 2 [Disabled]
External SATA Port 3 [Disabled]
External SATA Port 4 [Disabled]
External SATA Port 5 [Disabled]
(1) IDE Mode. (2) AHCI Mode.
(3) RAID Mode.
><: Select Screen
^v: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.
Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
Advanced
SATA Port5 Not Present
SATA Mode [AHCI Mode]
Aggressive Link Power Management [Enabled]
Port 0 Hot Plug [Disabled]
Port 1 Hot Plug [Disabled]
Port 2 Hot Plug [Disabled]
Port 3 Hot Plug [Disabled]
Port 4 Hot Plug [Disabled]
Port 5 Hot Plug [Disabled]
External SATA Port 0 [Disabled]
External SATA Port 1 [Disabled]
External SATA Port 2 [Disabled]
External SATA Port 3 [Disabled]
External SATA Port 4 [Disabled]
External SATA Port 5 [Disabled]
Staggered Spin-up [Disabled]
Staggered Spin-up [Disabled]
Staggered Spin-up [Disabled]
Staggered Spin-up [Disabled]
Staggered Spin-up [Disabled]
Staggered Spin-up [Disabled]
AHCI Supports Staggered Spin-up
><: Select Screen
^v: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.

**External SATA port0/1/2/3/4/5**
Enable/Disable SATA Ports Hot Plug Support.
[Enabled] / [Disabled]
Default is [Disabled]

**SATA Mode**
Select SATA Mode.
[IDE Mode] / [AHCI Mode] / [RAID Mode] / [Disabled]
Default is [AHCI Mode]

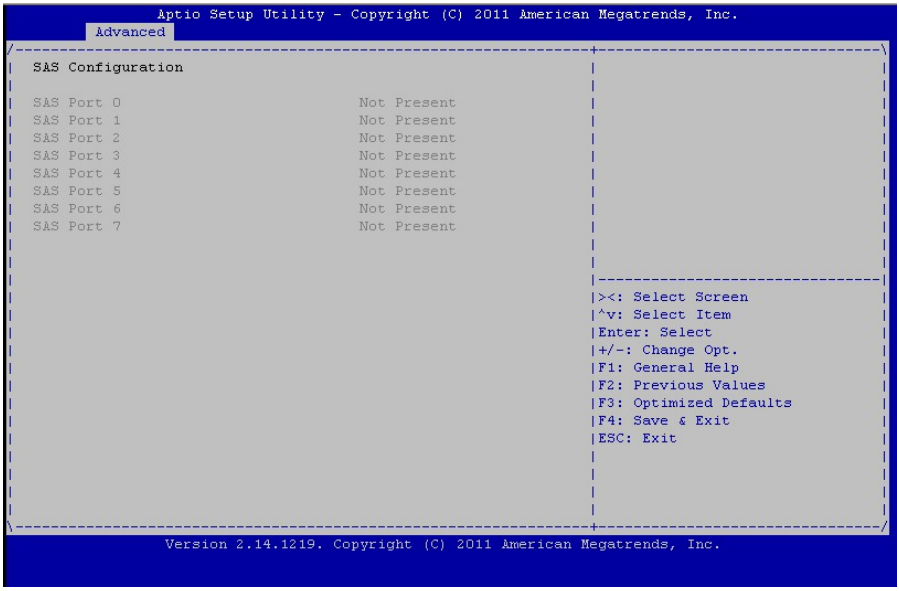
**Agressive Link Power Management**
[Enabled] / [Disabled]
Default is [Enabled]

**Port1/2/3/4/5 Hot Plug**
[Enabled] / [Disabled]
Default is [Disabled]

**External SATA Port 0/1/2/3/4/5**
[Enabled] / [Disabled]
Default is [Disabled]

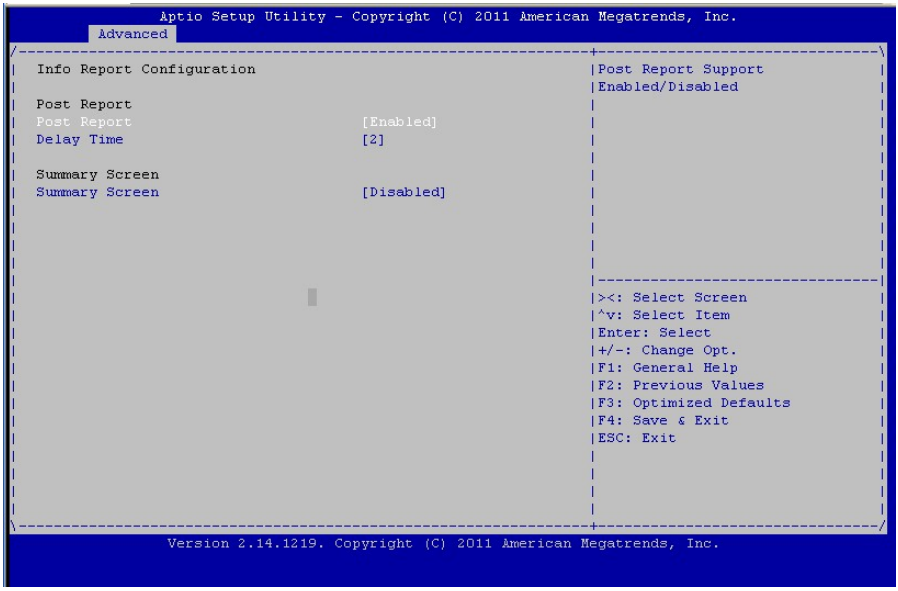
**Staggered Spin-up**
AHCI Supports Staggered Spin-up
[Enabled] / [Disabled]
Default is [Disabled]

### 3.6.8 - SAS Configuration


Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
Advanced
SAS Configuration
SAS Port 0 Not Present
SAS Port 1 Not Present
SAS Port 2 Not Present
SAS Port 3 Not Present
SAS Port 4 Not Present
SAS Port 5 Not Present
SAS Port 6 Not Present
SAS Port 7 Not Present
><: Select Screen
^v: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.

Read only.

### 3.6.9 Info Report Configuration

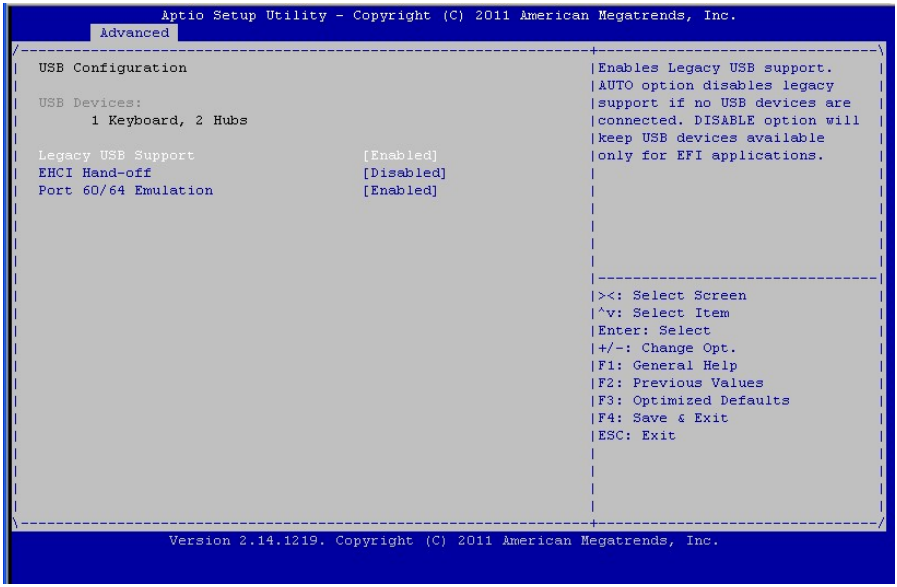



**Post Report**
Post report support enabled/disabled
[Enabled] / [Disabled]
Default is [Enabled]

**Delay Time**
Post report support enabled/disabled
[0]/[1]/[2]/[3]/[4]/[5]/[6]/[7]/[8]/[9]/[10]/[Until press ESC]
Default is [2]

**Summary Screen**
[Enabled] / [Disabled]
Default is [Disabled]

### 3.6.10 USB Configuration

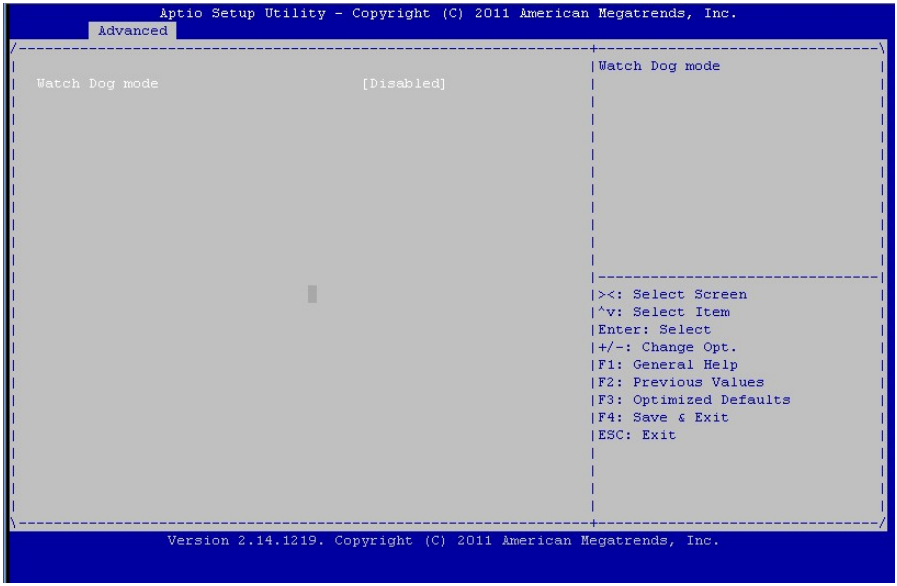

Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
Advanced
USB Configuration
USB Devices:
1 Keyboard, 2 Hubs
Legacy USB Support [Enabled]
EHCI Hand-off [Disabled]
Port 60/64 Emulation [Enabled]
Enables Legacy USB support. AUTO option disables legacy support if no USB devices are connected. DISABLE option will keep USB devices available only for EFI applications.
><: Select Screen
^v: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.

**Legacy USB Support**
Enables legacy USB support, Auto option disables legacy support if no USB devices are connected. Disable option will keep USB devices available only for EFI applications.
[Disabled] / [Enabled] / [Auto]
Default is [Enabled]

**EHCI Hand-off**
[Disabled] / [Enabled]
Default is [Disabled]

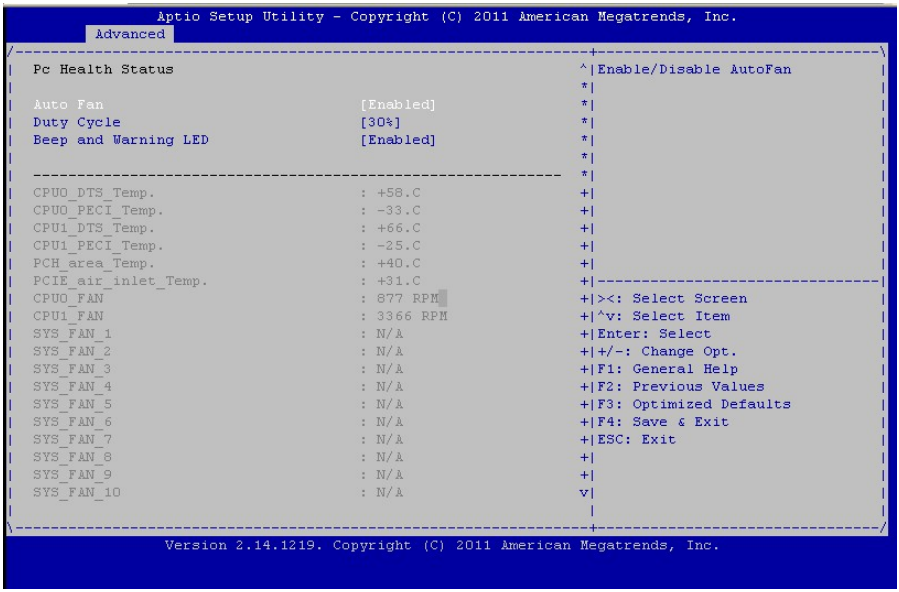
**Port 60/ 64 Emulation**
Enables IO port 60h/64h emulation support This should be enabled for the Complete USB keyboard legacy support for non-USB aware OSes.
[Disabled] / [Enabled]
Default is [Enabled]

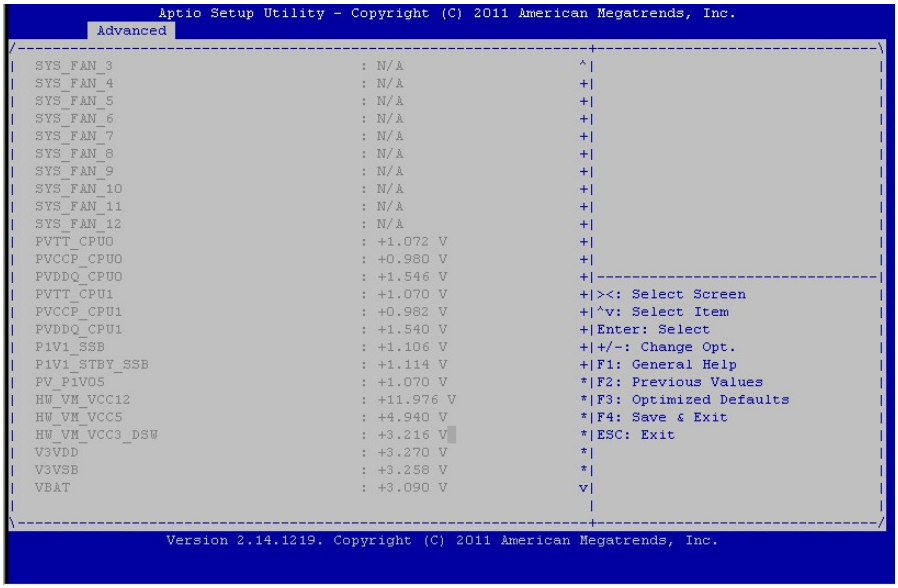
### 3.6.11– Watchdog Timer Configuration




**Watchdog mode**
[Disable] / [Post] / [OS] / [Power ON]
Default is [Disabled]

## 3.6.12 – Hardware Health Configuration



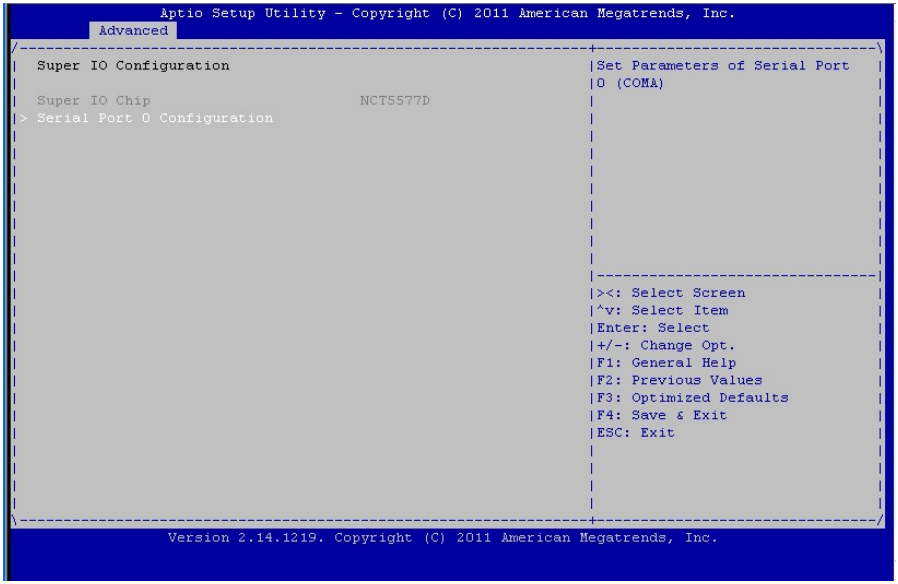
**Auto Fan**
[Disabled] / [Enabled]
Default is [Enabled]
The disable meaning is FAN Speed running FULL ON

**Duty Cycle**
[30% Duty Cycle] / [45% Duty Cycle] / [60% Duty Cycle]
Default is [30% Duty Cycle]

**Beep and warning LED**
[Enabled] / [Disabled]
Default is [Enabled]

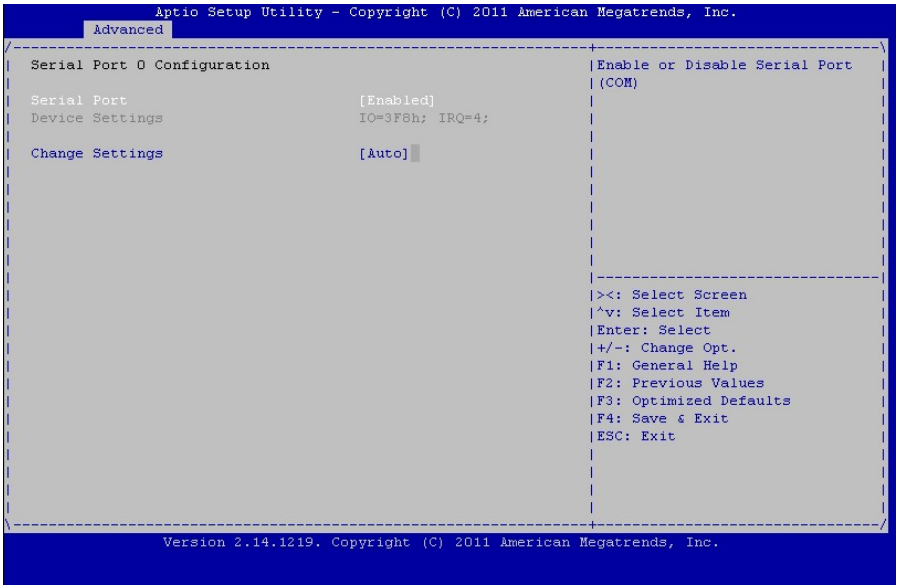
*The Fan data need set **Auto Fan** to [**Enabled**]'

### 3.6.13 Super I/O Configuration


Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
Advanced
Super IO Configuration
Super IO Chip NCT5577D
> Serial Port 0 Configuration
Set Parameters of Serial Port 0 (COMA)
><: Select Screen
^v: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.

**Super IO Chip**
Read only.

### 3.6.13.1 Serial port submenu

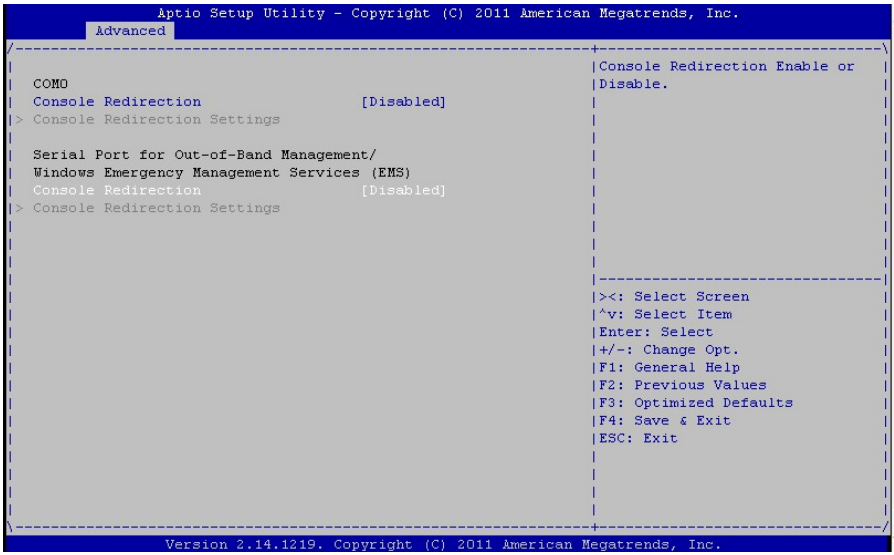



**Serial Port 0 Configuration**
Serial Port
Enable or Disable Serial Port (COM)
[Enabled] / [Disabled]
Default is [Enabled]

**Device Settings**
Read only. It can not be modified in user mode.

**Change/Settings**
Select an optimal setting for super I/O device.
[Auto] / [I/O=3F8h;IRQ=4] / [ I/O=3F8h;IRQ=3,4,5,6,7,8,9,10,11,12]/
[ I/O=2F8h;IRQ=3,4,5,6,7,8,9,10,11,12] / [ I/O=3E8h;IRQ=3,4,5,6,7,8,9,10,11,12]/
[ I/O=2E8h;IRQ=3,4,5,6,7,8,9,10,11,12]
Default is [Auto]

### 3.6.14 Serial Port Console Redirection

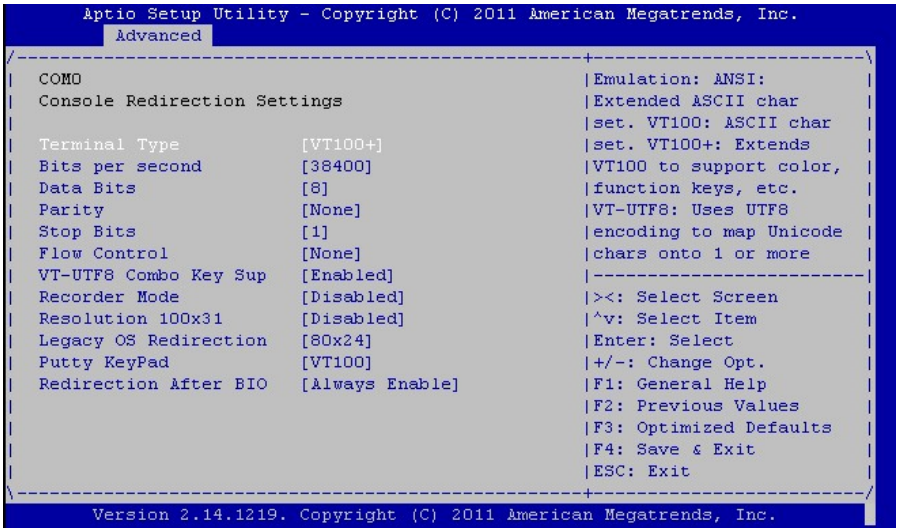



**Console Redirection**
Console redirection enable or disable.
[Disabled] / [Enabled]
Default is [Disabled]

**Serial Port for Out-Of-Band Management/Windows Emergency Services (EMS) Console Redirection**
Console redirection enable or disable.
[Disabled] / [Enabled]
Default is [Disabled]

**Console Redirection Settings**
The settings specify how the host computer (which the user is using) will exchange data. Both computers should have the same or compatible settings.

### 3.6.14.1 Console Redirection Submenu


Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
Advanced
COM0
Console Redirection Settings
Terminal Type [VT100+]
Bits per second [38400]
Data Bits [8]
Parity [None]
Stop Bits [1]
Flow Control [None]
VT-UTF8 Combo Key Sup [Enabled]
Recorder Mode [Disabled]
Resolution 100x31 [Disabled]
Legacy OS Redirection [80x24]
Putty KeyPad [VT100]
Redirection After BIO [Always Enable]
Emulation: ANSI: Extended ASCII char set. VT100: ASCII char set. VT100+: Extends VT100 to support color, function keys, etc. VT-UTF8: Uses UTF8 encoding to map Unicode chars onto 1 or more
><: Select Screen
^v: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.

**Terminal Type**
Emulation: ANSI: Extended ASCII charset.
VT100: ASCII charset.
VT100+: Extends VT100 to support color function keys, etc.
VT-UTF8: Uses UTF8 encoding to map Unicode chars onto 1 or more bytes.
[VT100] **/** [VT100+] / [VT-UTF8] / [ANSI]
Default is [VT100+]

**Bits per second**
Selects serial port transmission speed. The speed must be matched on the other side. Long or noisy lines may require lower speeds.
[9600] **/** [19200] / [38400] / [57600] / [115200]
Default is [38400]

**Data Bits**
[7] **/** [8]
Default is [8]

**Parity**
A parity bit can be sent with the data bits to detect some transmission errors.
Even: Parity bit is 0 if the num of 1's in the data bits is even.
Odd: parity bit is 0 if the num of 1's in the data bits is odd.
[None] **/** [Even] / [Odd] / [Mark] / [Space]
Default is [None]

**Stop Bits**
Stop bits indicate the end of a serial data packet. (A start bit indicates the beginning). The standard setting is 1 stop bit.1 communication with slow devices may require more than 1.
[1] **/** [2]
Default is [1]

**Flow Control**
Flow control can prevent data loss from buffer overflow. When sending data, If the receiving buffers are full, a 'stop' signal can be sent to stop the data flow. Once the buffers are empty, a 'start' signal can be sent to restart the flow. Hardware flow control uses two wires to send start/stop signal.
**[None] / [Hardware RTS/CTS]**
Default is [None]

**VT-UTF8 Combo Key Support**
Enable VT-UTF8 Combination Key Support for ANSI/VT100 terminals.
[Enabled] / [Disabled]
Default is [Enabled]

**Recorder Mode**
With this mode enabled only text will be sent. This is to capture Terminal data.
[Disabled] / [Enabled]
Default is [Disabled]

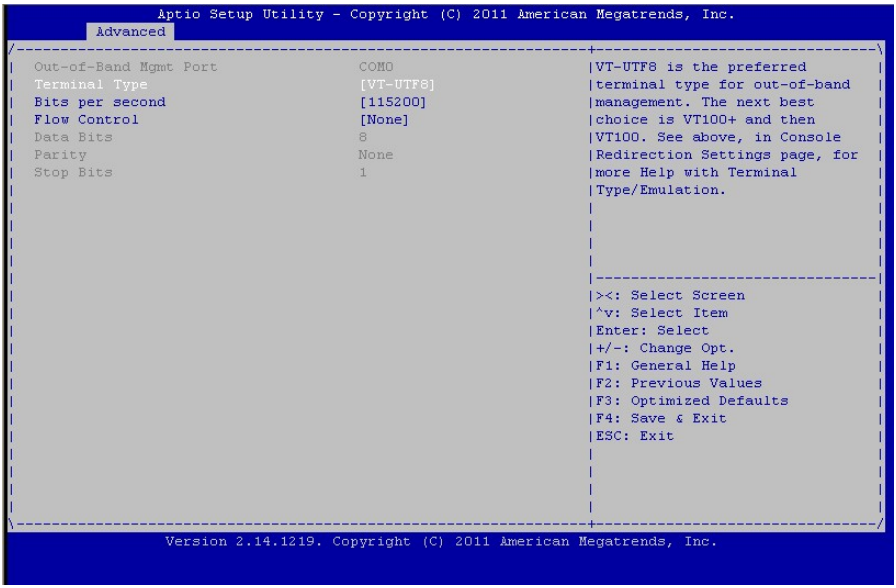
**Resolution 100x31**
Enable or disable extended terminal resolution.
[Disabled] / [Enabled]
Default is [Disabled]

**Legacy OS Redirection Resolution**
On Legacy OS, the number of rows and columns supported redirection.
[80x24] / [80x25]
Default is [80x24]

**Putty KeyPad**
Select FunctionKey and KeyPad on Putty.
[VT100] / [LINUX] / [XTERMR6] / [SCO] / [ESCN] / [VT400]
Default is [VT100]

**Redirection After BIOS POST**
The settings specify if bootloader is selected than Legacy console redirection is disabled before booting to Legacy OS. Default value is always enable means Legacy.
[Always enable] / [Bootloader]
Default is [Always enable]

### 3.6.14.2 Serial Port for Out-Of-Band Management/Windows Emergency Services (EMS) Console Redirection Settings




**Out-of Band Mgmt Port COM0**
Only read

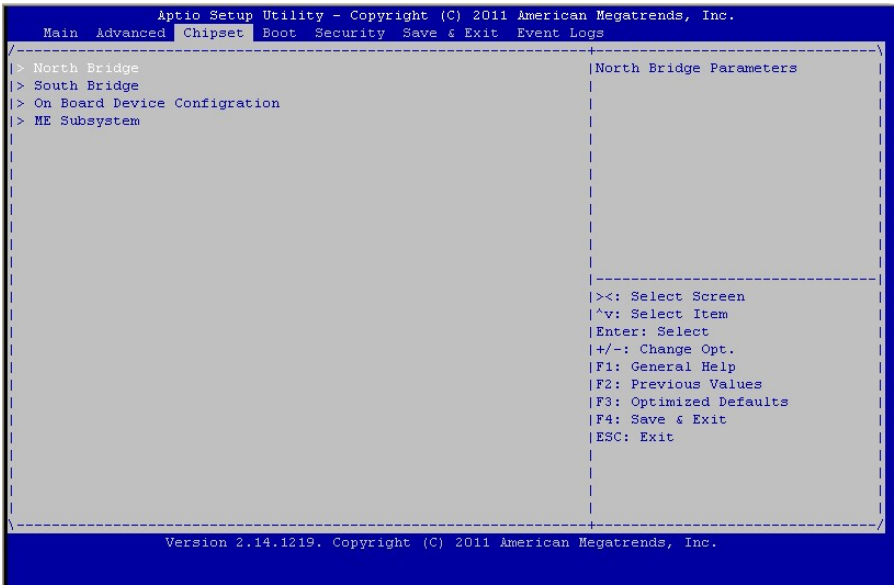
**Terminal Type**
VT-UTF8 is the preferred terminal type for out-of-band management. The next best choice is VT100+ and then VT100. See above, in Console Redirection Settings page, for more Help with Terminal Type/Emulation.
[VT-UTF8] / [VT100] / [VT100+] / [ANSI]
Default is [VT-UTF8]

**Bits per Second**
Select serial port transmission speed. The speed must be matched on the other side. Long or noisy lines may require lower speeds.
[115200] / [9600] / [19200] / [57600]
Default is [115200]

**Flow Control**
Flow Control can prevent data loss from buffer overflow. When sending data, if the receiving buffers are full, a 'stop' signal can be sent to stop the data flow. Once the buffers are empty, a 'start' signal can be sent to restart the flow. Hardware flow control uses two wires to send start/stop signal.
[None] / [Hardware RTS/CTS] / [SoftwareXon/Xoff]
Default is [None]

**Data Bits / Parity / Stop Bits**
Read only.

## 3.7 - Chipset Menu


Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
Main Advanced Chipset Boot Security Save & Exit Event Logs
> North Bridge
> South Bridge
> On Board Device Configration
> ME Subsystem
North Bridge Parameters
><: Select Screen
^v: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.

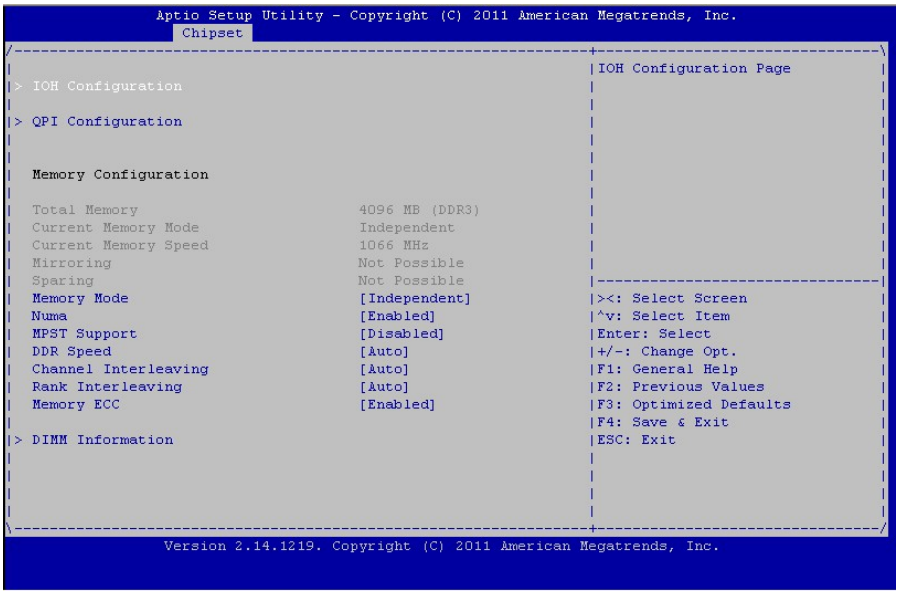
**North Bridge**
North Bridge Parameters.

**South Bridge**
South Bridge Parameters.

**Onboard Device Configuration**
Configure Onboard Device

**ME Subsystem**
ME Subsystem Configuration

### 3.7.1 – North Bridge Chipset Configuration Sub- Menu




**Total Memory / Current Memory Mode / Current Memory Speed / Mirroring / Sparing**
Read only.

**Memory Mode**
Select the mode for memory initialization.
[Independent] / [Mirroring] / [Lock Step] / [Sparing]
Default is [Independent]

**Numa**
Enable or disable Non uniform Memory Access (NUMA).
[Enabled] / [Disabled]
Default is [Enabled]

**MPST Support**
Enable or disable MPST Support. Along with enabling MPST Support, it also requires NUMA to be enabled and channel Interleaving to be set to 1-way for MPST tables to be published.
[Enabled] / [Disabled]
Default is [Disabled]

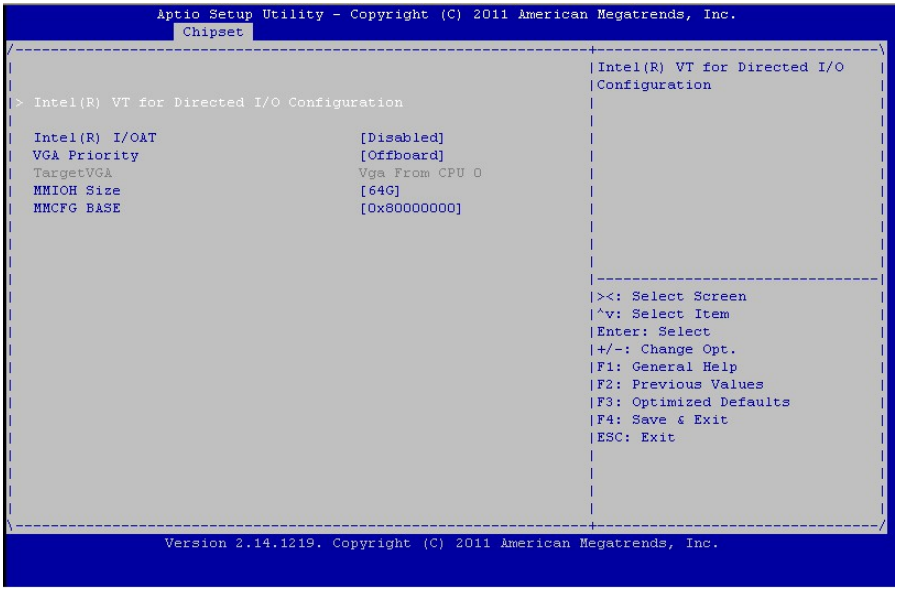
**DDR Speed**
Force DDR Speed.
[Auto] **/** [Force DDR3 800] / [Force DDR3 1066] / [Force DDR3 1333] / [Force DDR3 1600] / [Force DDR3 1866]
Default is [Auto]

**Channel Interleaving**
Select different Channel Interleaving setting.
[Auto] **/** [1 Way] / [2 Way] / [3 Way] / [4 Way]
Default is [Auto]

**Rank Interleaving**
Select different rank Interleaving setting.
[Auto] **/** [1 Way] / [2 Way] / [4 Way] / [8 Way]
Default is [Auto]

**Memory ECC**
Enable/Disable Memory ECC.
[Enabled] / [Disabled]
Default is [Disabled]
Default is [Enabled]

### 3.7.1.1 IOH Configuration Submenu




**Intel® I/OAT**
Enable/Disable Intel® I/O Acceleration Technology (I/OAT).
[Disabled] / [Enabled]
Default is [Disabled]

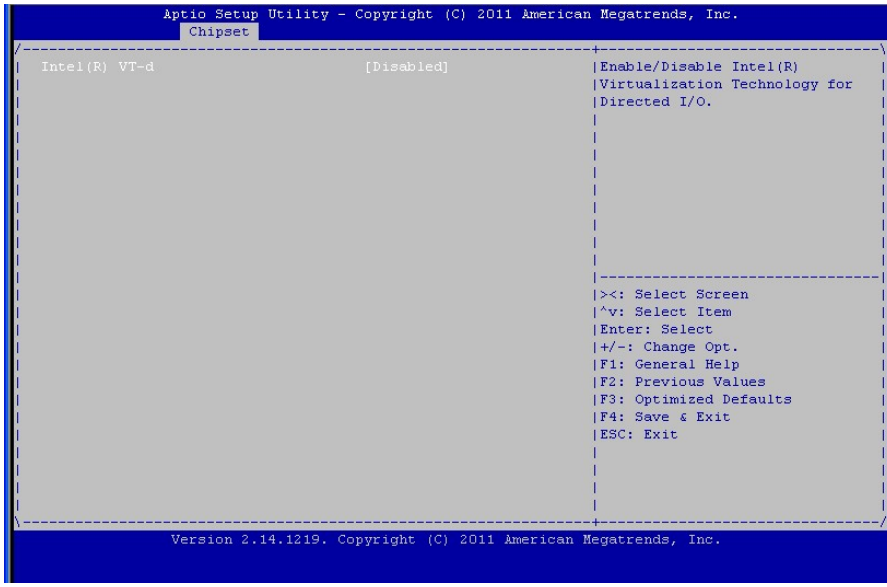
**VGA Priority**
Decide the priority between onboard and its offboard video device found.
[Offboard] / [Onboard]
Default is [Offboard]

**Target VGA**
Read only.

**MMIOH Size**
Select number of 1GB contiguous regions to be assigned MMIOH space per CPU.
[64G] / [1G] / [2G] / [4G] / [8G] / [16G] / [32G] / [64G] / [128G]
Default is [64G]

**MMCFG Base**
Select the MMCFG BASE Values.
[0x80000000] / [0xA0000000] / [0xC0000000]
Default is [0x80000000]

#### 3.7.1.1.1 Intel® VT for Directed I/O Configuration Submenu




**Intel® VT-d**
Enable/Disable Intel® Virtualization Technology Directed I/O.
[Disabled] / [Enabled]
Default is [Disabled]

**NOTE:** The following items will appear when **Intel® VT-d** is set to [Enabled].

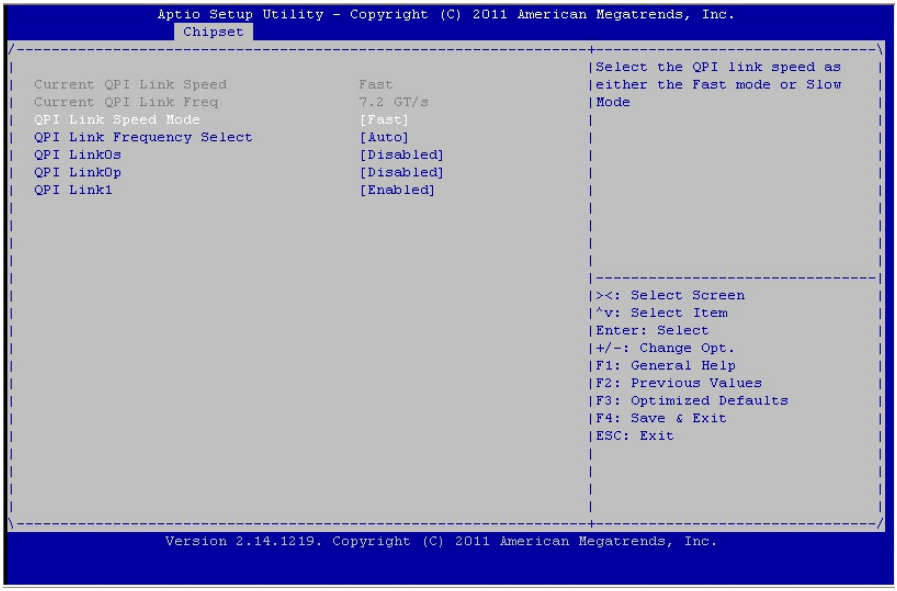
**Interrupt Remapping**
Enable/Disable VT-d Engine Interrupt Remapping Support.
[Enabled] / [Disabled]
Default is [Enabled]

**Coherency Support**
Enable/Disable VT-d Engine Coherency Support.
[Disabled] / [Enabled]
Default is [Disabled]

**ATS Support**
Enable/Disable VT-d Engine Address Translation Services support.
[Disabled] / [Enabled]
Default is [Disabled]

**Pass-through DMA**
Enable/Disable VT-d Engine Pass through DMA support.
[Enabled] **/** [Disabled]
Default is [Enabled]

### 3.7.1.2 QPI Configuration Submenu




**QPI Link Speed Mode**
Select the QPI link speed as either the Fast Mode or the Slow Mode.
[Fast] **/** [Slow]
Default is [Fast]

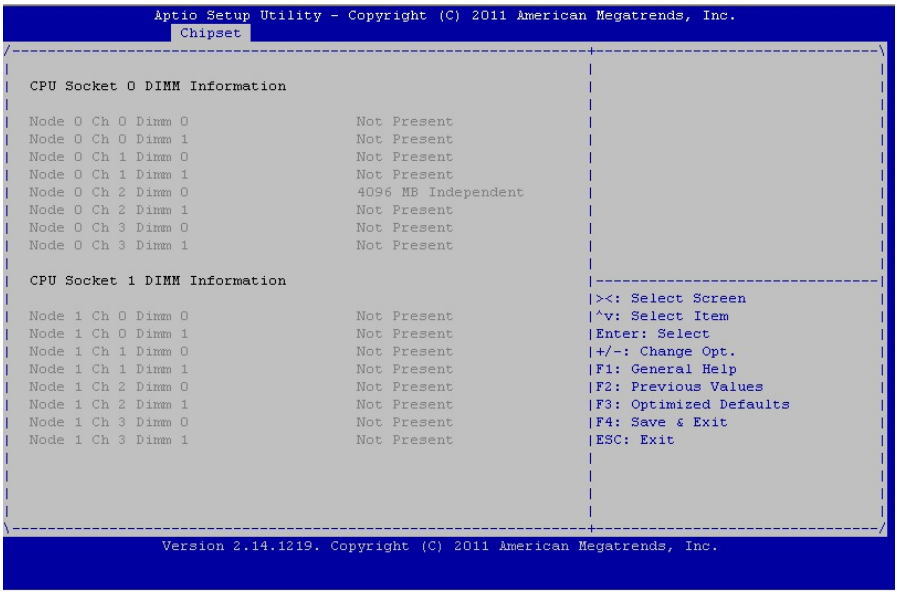
**QPI Link Frequency Select**
Select the QPI Link Frequency.
[Auto] **/** [6.4GT/s] / [7.2GT/s] / [8.0GT/s]
Default is [Auto]

**QPI LinkOs**
Enable/Disable QPI LinkOs.
[Enabled] **/** [Disabled]
Default is [Disabled]

**QPI LinkOp**
Enable/Disable QPI LinkOp.
[Enabled] / [Disabled]
Default is [Disabled]

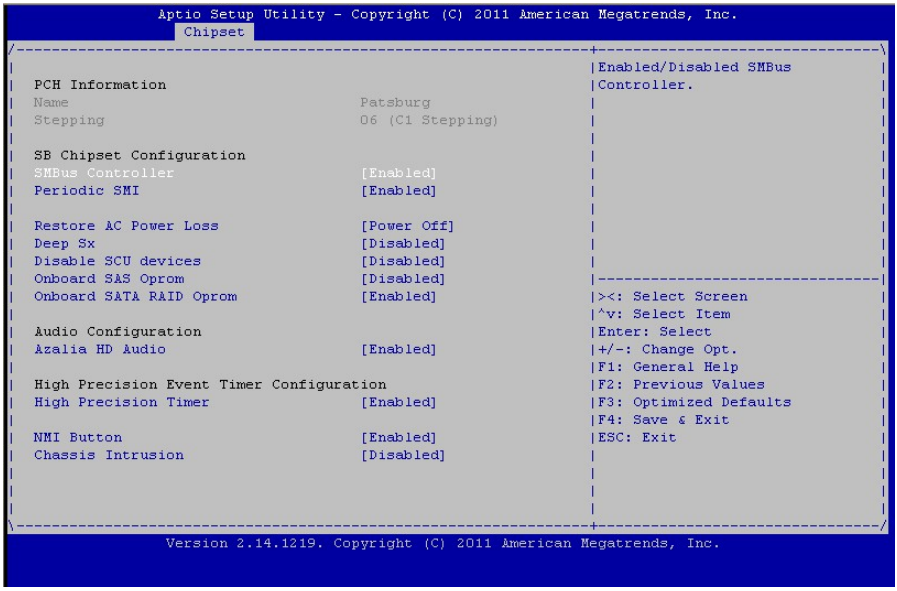
**QPI Link1**
Enable/Disable QPI Link1.
[Enabled] / [Disabled]
Default is [Enabled]

### 3.7.1.3 DIMM Information Submenu


Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
Chipset
CPU Socket 0 DIMM Information
Node 0 Ch 0 Dimm 0 Not Present
Node 0 Ch 0 Dimm 1 Not Present
Node 0 Ch 1 Dimm 0 Not Present
Node 0 Ch 1 Dimm 1 Not Present
Node 0 Ch 2 Dimm 0 4096 MB Independent
Node 0 Ch 2 Dimm 1 Not Present
Node 0 Ch 3 Dimm 0 Not Present
Node 0 Ch 3 Dimm 1 Not Present
CPU Socket 1 DIMM Information
Node 1 Ch 0 Dimm 0 Not Present
Node 1 Ch 0 Dimm 1 Not Present
Node 1 Ch 1 Dimm 0 Not Present
Node 1 Ch 1 Dimm 1 Not Present
Node 1 Ch 2 Dimm 0 Not Present
Node 1 Ch 2 Dimm 1 Not Present
Node 1 Ch 3 Dimm 0 Not Present
Node 1 Ch 3 Dimm 1 Not Present
><: Select Screen
^v: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.

Read only.

### 3.7.2 – South Bridge Configuration Sub-Menu




**PCH Information**
Name / Stepping
Only read

**SMBus Controller**
[Disabled] / [Enabled]
Default is [Enabled]

**Periodic SMI**
[Disabled] / [Enabled]
Default is [Enabled]

**Restore AC Power Loss**
[Power Off] / [ Power On]/[ Last State]
Default is [Power Off]

**Deep Sx**
Deep Sx configuration.
NOTE: Mobile platforms support Deep S4/S5 in DC only and Desktop platforms support Deep S4/S5 in AC only.

[Disabled] / [Enabled in S5 (Battery)] / [Enabled in S5] / [Enabled in S4 and S5 (Battery)] / [Enabled in S4 and S5]
Default is [Disabled]

**Disable SCU devices**
[Disabled] / [Enabled]
Default is [Disabled]

**Onboard SAS OPROM**
Enable/Disable onboard SAS RAID option rom if Launch Storage OpROM is enabled.
[Enabled] **/** [Disabled]
Default is [Disabled]

**Onboard SATA RAID OPROM**
Enable/Disable onboard SATA RAID option rom if Launch Storage OpROM is enabled.
[Enabled] **/** [Disabled]
Default is [Enabled]

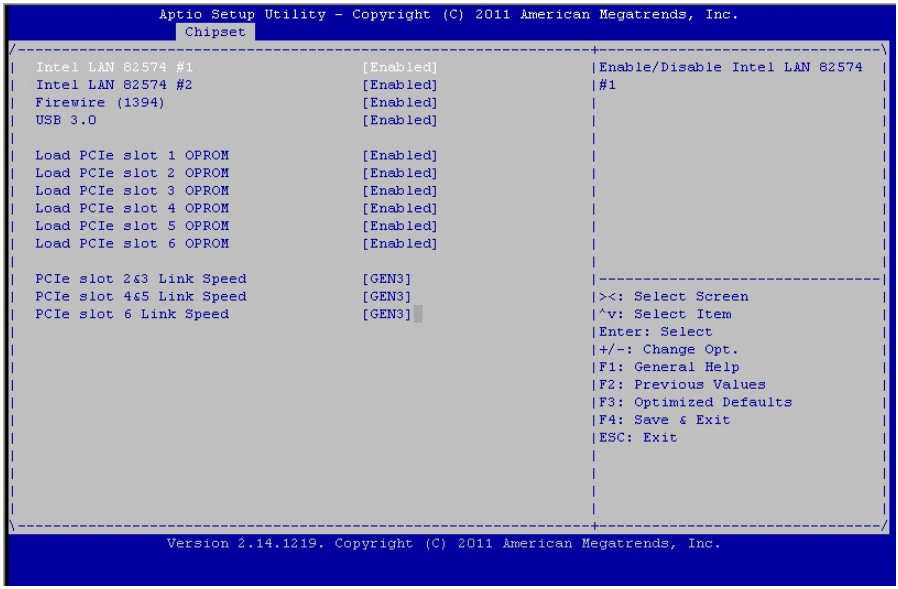
**Azalia HD Audio**
[Enabled] **/** [Disabled]
Default is [Enabled]

**Azalia internal HDMI**
[**En**abled] **/** [Disabled]
Default is [Disabled]

**NMI Button**
[Enabled] / [Disabled]
Default is [Enabled]

**Chassis Intrusion**
Enabled: When a chassis open event is detected, the BIOS will display the event.
[Enabled] / [Disabled]
Default is [Disabled]

### 3.7.3 – Onboard Devices Configuration Sub-Menu


Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
Chipset
Intel LAN 82574 #1 [Enabled]
Intel LAN 82574 #2 [Enabled]
Firewire (1394) [Enabled]
USB 3.0 [Enabled]
Load PCIe slot 1 OPROM [Enabled]
Load PCIe slot 2 OPROM [Enabled]
Load PCIe slot 3 OPROM [Enabled]
Load PCIe slot 4 OPROM [Enabled]
Load PCIe slot 5 OPROM [Enabled]
Load PCIe slot 6 OPROM [Enabled]
PCIe slot 2&3 Link Speed [GEN3]
PCIe slot 4&5 Link Speed [GEN3]
PCIe slot 6 Link Speed [GEN3]
Enable/Disable Intel LAN 82574 #1
><: Select Screen
^v: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.

**Intel LAN 82574 #1**
[Enabled with iSCSI] / [Enabled with PXE] / [Enabled] / [Disabled]
Default is [Enabled]

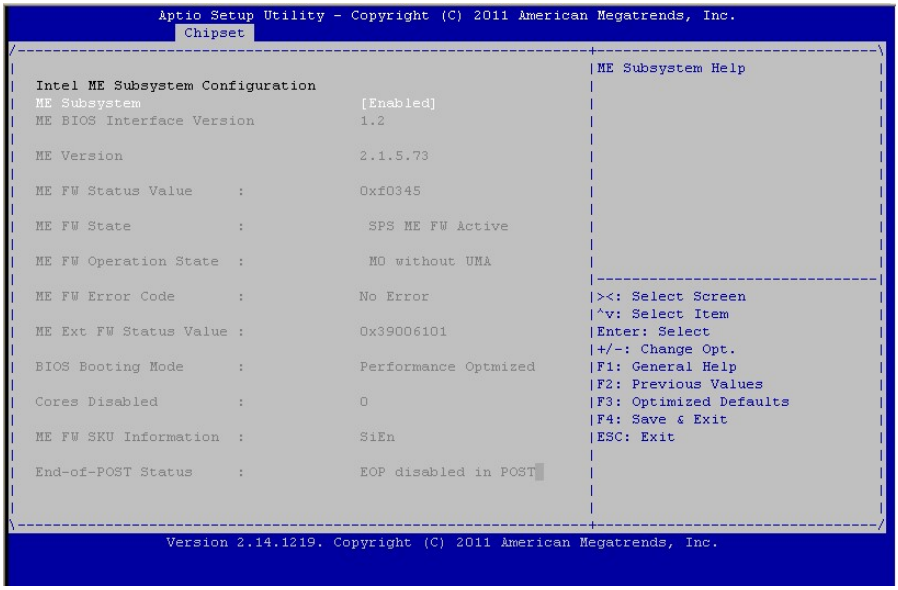
**Intel LAN 82574 #2**
[Enabled with PXE] / [Enabled] / [Disabled]
Default is [Enabled]

**Firewire(1394)**
Enable/disable firewire(1394)
[Enabled] / [Disabled]
Default is [Enabled]

**USB3.0**
[Enabled] / [Disabled]
Default is [Enabled]

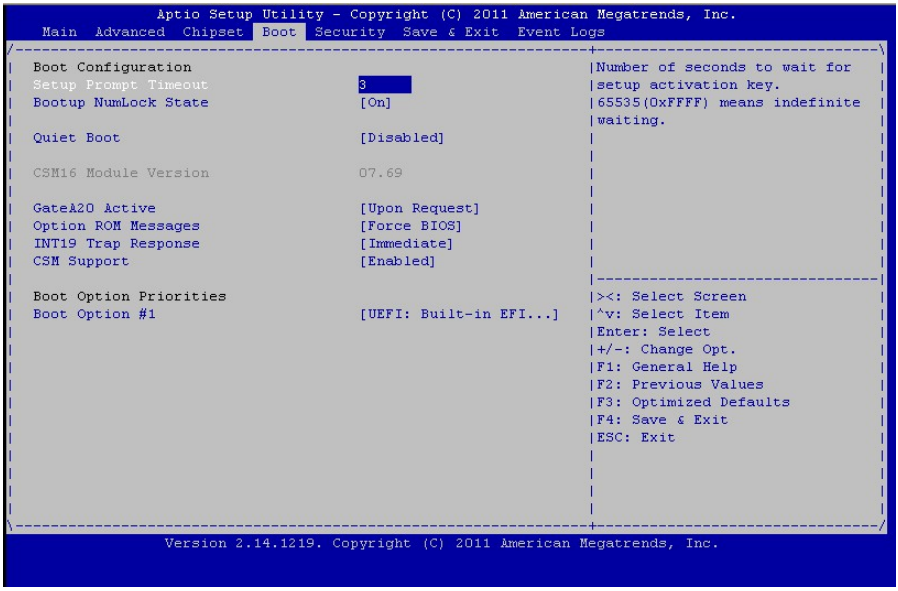
**Load PCIe slot 1/2/3/4/5/6 OPROM**
[Enabled] / [Disabled]
Default is [Enabled]

### 3.7.4 – ME Sub- Menu


Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
Chipset
Intel ME Subsystem Configuration
ME Subsystem [Enabled]
ME BIOS Interface Version 1.2
ME Version 2.1.5.73
ME FW Status Value : 0xf0345
ME FW State : SPS ME FW Active
ME FW Operation State : M0 without UMA
ME FW Error Code : No Error
ME Ext FW Status Value : 0x39006101
BIOS Booting Mode : Performance Optmized
Cores Disabled : 0
ME FW SKU Information : SiEn
End-of-POST Status : EOP disabled in POST
ME Subsystem Help
><: Select Screen
^v: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.

**ME Subsystem**
Me subsystem Help
[Enabled] / [Disabled]
Default is [Enabled]

## 3.8 - Boot Configuration




**Setup Prompt Timeout**
Only read

**Bootup Numlock State**
Select the keyboard Numlock state
[On] / [Off]
Default is [On]

**Quiet Boot**
[Disabled] / [Enabled]
Default is [Disabled]

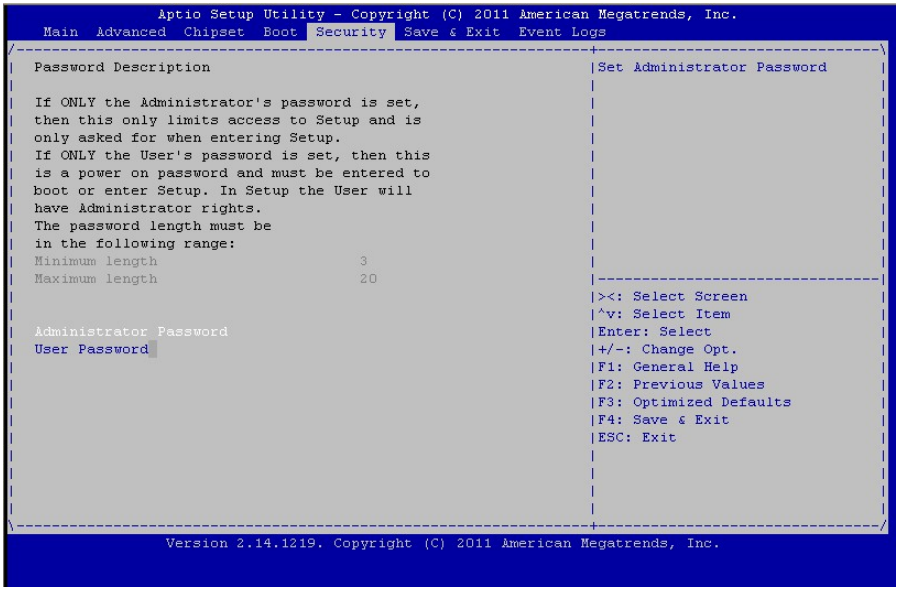
**GateA20 Active**
[Upon Request] / [Always]
Default is [Upon Request]

**Option ROM Messages**
Set display mode for option ROM upon request—GA20 can be disabled using BIOS series Always—do not allow disabling GA20; this option is useful when any RT code is executed above IMB.
[Force BIOS] / [Keep Current]
Default is [Force BIOS]

**INT 19 Trap Response**
BIOS reaction on INT19 trapping by option ROM: IMMEDIATE-execute the trap right away; POSTPONED-execute the trap during legacy boot.
[Immediate] / [Postponed]
Default is [Immediate]

**Boot Option #1**
Select the first boot device.
[Device Name] / [Disabled]
Default is [Device Name]

## 3.9 - Security Menu

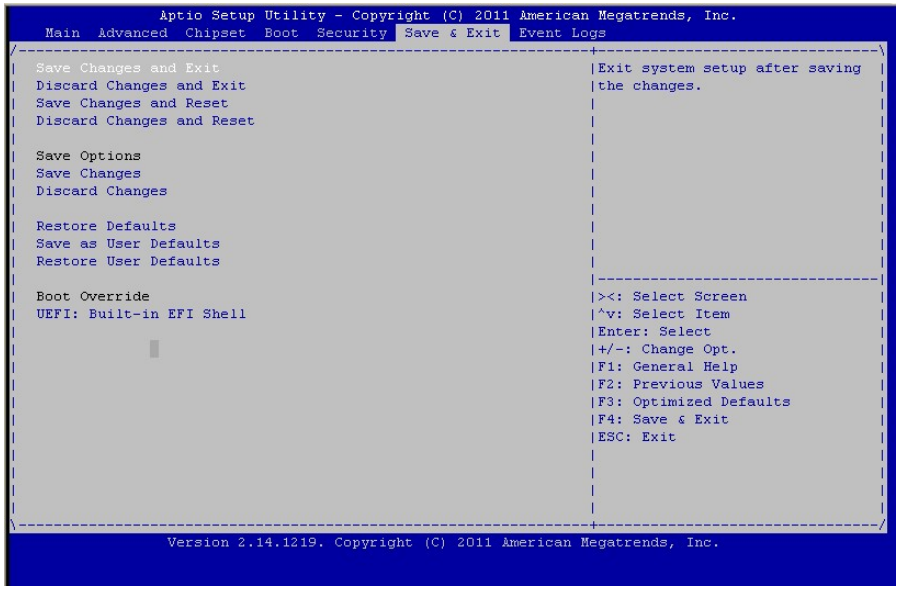

Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
Main Advanced Chipset Boot Security Save & Exit Event Logs
Password Description
If ONLY the Administrator's password is set, then this only limits access to Setup and is only asked for when entering Setup.
If ONLY the User's password is set, then this is a power on password and must be entered to boot or enter Setup. In Setup the User will have Administrator rights.
The password length must be in the following range:
Minimum length 3
Maximum length 20
Administrator Password
User Password
Set Administrator Password
><: Select Screen
^v: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.

**Password Description**
Read only.

**Administrator Password**
Install or change the password.

**User Password**
Install or change the password.

## 3.10 - Save & Exit Menu




**Save Changes and Exit**
Use this option to exit setup utility and re-boot.
All new selections you have made are stored into CMOS.
System will use the new settings to boot up.

**Discard Changes and Exit**
Use this option to exit setup utility and re-boot.
All new selections you have made are not stored into CMOS.
System will use the old settings to boot up.

**Save Changes and Reset**
Use this option to save all new setup values that you have made and reset.

**Discard Changes and Reset**
Use this option to discard all new setup values that you have made and reset.

**Save Changes**
Use this option to save all new setup values that you have made

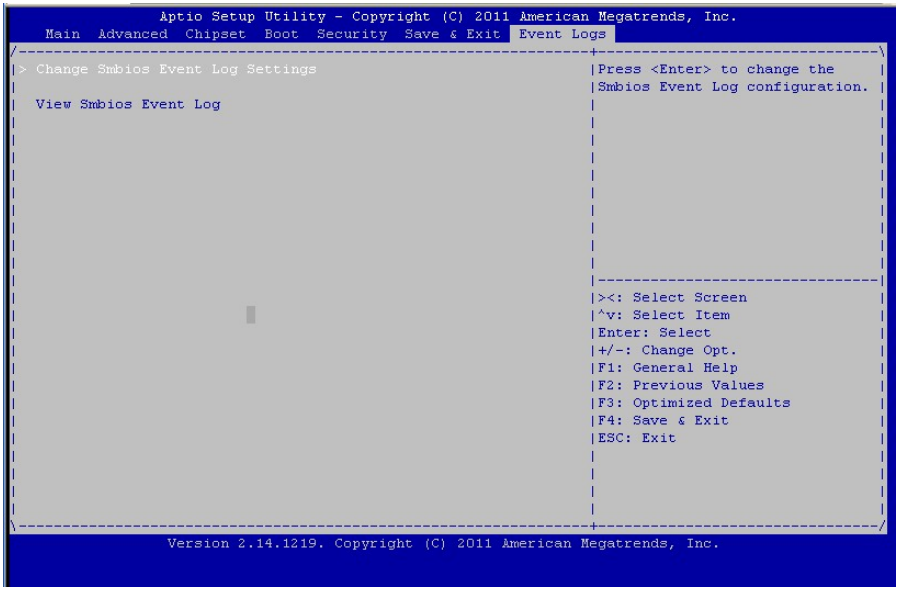
**Discard Changes**
Use this option to load all default failsafe setup values.

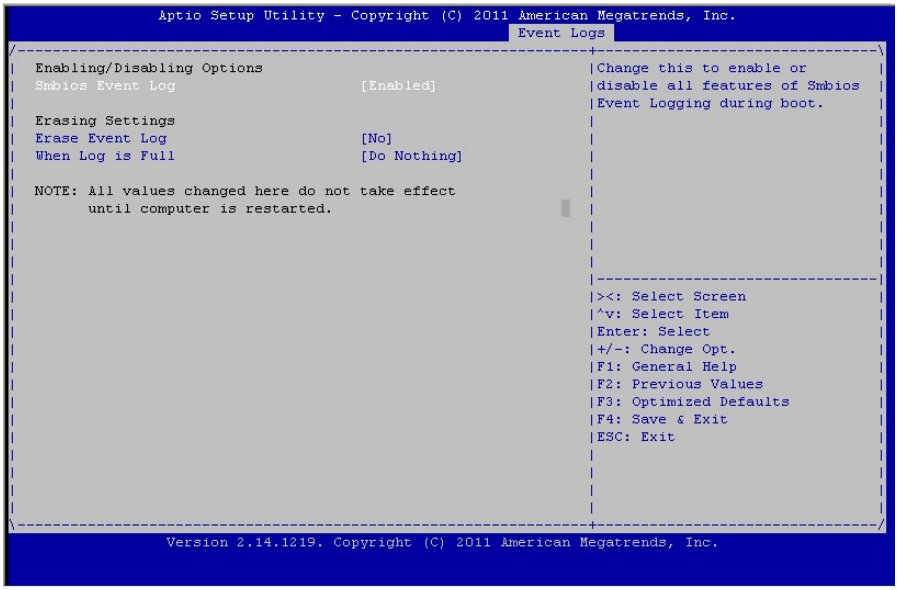
**Restore Defaults**
Use this option to restore defaults

**Save as user Defaults**
Use this option to save the user defaults

**Restore user Defaults**
Use this option to restore the user defaults.

## 3.11 - Event Logs


Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
Main Advanced Chipset Boot Security Save & Exit Event Logs
> Change Smbios Event Log Settings
View Smbios Event Log
Press <Enter> to change the Smbios Event Log configuration.
><: Select Screen
^v: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.


Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
Event Logs
Enabling/Disabling Options
Smbios Event Log [Enabled]
Erasing Settings
Erase Event Log [No]
When Log is Full [Do Nothing]
NOTE: All values changed here do not take effect until computer is restarted.
Change this to enable or disable all features of Smbios Event Logging during boot.
><: Select Screen
^v: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.

**Smbios Event Log**
Change this to enable or disable all features of Smbios Event Logging during boot.
[Enabled] / [Disabled]
Default is [Enabled]

**Erase Event Log**
Choose options for erasing Smbios Event Log. Erasing is done prior to any logging activation during reset.
[NO] / [Yes，next year] / [Yes, every year]
Default is [NO]

**When Log is full**
Choose options for reactions to a full Smbios Event Log.
[Do Nothing] / [Erase Immediately]
Default is [Do Nothing]

# Chapter 4: Diagnostics

If you experience problems with setting up your system, always check the following things in the following order:

**Memory, Video, CPU**

By checking these items, you will most likely find out what the problem might have been when setting up your system. For more information on troubleshooting, check the TYAN® website at: http://**www.TYAN.com**.

## 4.1 - Flash Utility

Every BIOS file is unique for the motherboard it was designed for. For Flash Utilities, BIOS downloads, and information on how to properly use the Flash Utility with your motherboard, please check the TYAN® web site:

**http://www.TYAN.com/**

NOTE: Please be aware that by flashing your BIOS, you agree that in the event of a BIOS flash failure, you must contact your dealer for a replacement BIOS. There are no exceptions. TYAN® does not have a policy for replacing BIOS chips directly with end users. In no event will TYAN® be held responsible for damages done by the end user.

## 4.2 - AMIBIOS Post Code (Aptio)

The POST code checkpoints are the largest set of checkpoints during the BIOS pre-boot process. The following table describes the type of checkpoints that may occur during the POST portion of the BIOS:

**Checkpoint Ranges**

| Status Code Range | Description |
|---|---|
| 0x01 – 0x0B | SEC execution |
| 0x0C – 0x0F | Sec errors |
| 0x10 – 0x2F | PEI execution up to and including memory detection |
| 0x30 – 0x4F | PEI execution after memory detection |
| 0x50 – 0x5F | PEI errors |
| 0x60 – 0x8F | DXE execution up to BDS |
| 0x90 – 0xCF | BDS execution |
| 0xD0 – 0xDF | DXE errors |
| 0xE0 – 0xE8 | S3 Resume (PEI) |
| 0xE9 – 0xEF | S3 Resume errors (PEI) |
| 0xF0 – 0xF8 | Recovery (PEI) |
| 0xF9 – 0xFF | Recovery errors (PEI) |

**Standard Checkpoints**

SEC Phase

| Status Code | Description |
|---|---|
| 0x00 | Note used |
| **Progress Codes** | |
| 0x01 | Power on. Reset type detection (soft/hard). |
| 0x02 | AP initialization before microcode loading |
| 0x03 | North Bridge initialization before microcode loading |
| 0x04 | South Bridge initialization before microcode loading |
| 0x05 | OEM initialization before microcode loading |
| 0x06 | Microcode loading |
| 0x07 | AP initialization after microcode loading |
| 0x08 | North Bridge initialization after microcode loading |
| 0x09 | South Bridge initialization after microcode loading |
| 0x0A | OEM initialization after microcode loading |
| 0x0B | Cache initialization |

| SEC Error Codes | |
|---|---|
| 0x0C – 0x0D | Reserved for future AMI SEC error codes |
| 0x0E | Microcode not found |
| 0x0F | Microcode not found |

SEC Beep Codes
None

PEI Phase

| Status Code | Description |
|---|---|
| **Progress Codes** | |
| 0x10 | PCI Core is started |
| 0x11 | Pre-memory CPU initialization is started |
| 0x12 | Pre-memory CPU initialization (CPU module specific) |
| 0x13 | Pre-memory CPU initialization (CPU module specific) |
| 0x14 | Pre-memory CPU initialization (CPU module specific) |
| 0x15 | Pre-memory North Bridge initialization is started |
| 0x16 | Pre-Memory North Bridge initialization (North Bridge module specific) |
| 0x17 | Pre-memory North Bridge initialization (North Bridge module specific) |
| 0x18 | Pre-Memory North Bridge initialization (North Bridge module specific) |
| 0x19 | Pre-memory South Bridge initialization is started |
| 0x1A | Pre-Memory South Bridge initialization (South Bridge module specific) |
| 0x1B | Pre-memory South Bridge initialization (South Bridge module specific) |
| 0x1C | Pre-Memory South Bridge initialization (South Bridge module specific) |
| 0x1D – 0x2A | OEM pre-memory initialization codes |
| 0x2B | Memory initialization. Serial Presence Detect (SPD) data reading |
| 0x2C | Memory initialization. Memory presence detection |
| 0x2D | Memory initialization. Programming memory timing information |
| 0x2E | Memory initialization. Configuring memory |
| 0x2F | Memory initialization (other) |
| 0x30 | Reserved for ASL (see ASL Status Codes section below) |
| 0x31 | Memory Installed |
| 0x32 | CPU post-memory initialization is started. |
| 0x33 | CPU post-memory initialization. Cache initialization |
| 0x34 | CPU post-memory initialization. Application Processor(s) (AP) initialization |
| 0x35 | CPU post-memory initialization. Boot Strap Processor (BSP) selection |
| 0x36 | CPU post-memory initialization. System Management Mode(SMM) initialization |
| 0x37 | Post-Memory North Bridge initialization is started. |

| Status Code | Description |
|---|---|
| 0x38 | Post-Memory North Bridge initialization (North Bridge module specific) |
| 0x39 | Post-Memory North Bridge initialization (North Bridge module specific) |
| 0x3A | Post-Memory North Bridge initialization (North Bridge module specific) |
| 0x3B | Post-Memory South Bridge initialization is started |
| 0x3C | Post-Memory South Bridge initialization (South Bridge module specific) |
| 0x3D | Post-Memory South Bridge initialization (South Bridge module specific) |
| 0x3E | Post-Memory South Bridge initialization (South Bridge module specific) |
| 0x3F – 0x4E | OEM post memory initialization codes |
| 0x4F | DXE PIL is started |
| **PCI Error Codes** | |
| 0x50 | Memory initialization error. Invalid memory type or incompatible memory speed |
| 0x51 | Memory initialization error. SPD reading has failed. |
| 0x52 | Memory initialization error. Invalid memory size or memory modules do not match. |
| 0x53 | Memory initialization error. No usable memory detected |
| 0x54 | Unspecified memory initialization error |
| 0x55 | Memory not installed |
| 0x56 | Invalid CPU type or speed |
| 0x57 | CPU mismatch |
| 0x58 | CPU self test failed or possible CPU cache error |
| 0x59 | CPU microcode is not found or microcode update is failed. |
| 0x5A | Internal CPU error |
| 0x5B | Reset PPI is not available. |
| 0x5C – 0x5F | Reserved for future AMI error codes |
| **S3 Resume Progress Codes** | |
| 0xE0 | S3 Resume is started (S3 Resume PPI is called by the DXE IPL). |
| 0xE1 | S3 Boot Script execution |
| 0xE2 | Video repost |
| 0xE3 | OS S3 wake vector call |
| 0xE4 – 0xE7 | Reserved for future AMI progress codes |
| **S3 Resume Error Codes** | |
| 0xE8 | S3 Resume failed |
| 0xE9 | S3 Resume PPI not found |
| 0xEA | S3 Resume Boot Script error |
| 0xEB | S3 OS wake error |
| 0xEC – 0xEF | Reserved for future AMI error codes |

| Recovery Progress Codes | |
|---|---|
| 0xF0 | Recovery condition triggered by firmware (Auto recovery) |
| 0xF1 | Recovery condition triggered by user (forced recovery) |
| 0xF2 | Recovery process started |
| 0xF3 | Recovery firmware image is found. |
| 0xF4 | Recovery firmware image is loaded. |
| 0xF5 – 0xF7 | Reserved for future AMI progress codes |
| **Recovery Error Codes** | |
| 0xF8 | Recovery PPI is not available. |
| 0xF9 | Recovery capsule is not found. |
| 0xFA | Invalid recovery capsule |
| 0xFB – 0xFF | Reserved for future AMI error codes |

PEI Beep Codes

| # of Beeps | Description |
|---|---|
| 1 (repeatedly) | Memory not installed |
| 1 | Memory was installed twice (installPEIMemory routine in PEI Core called twice). |
| 2 | Recovery started |
| 3 | DXEIPL was not found. |
| 3 | DXE Core Firmware Volume was not found. |
| 4 | Recovery failed |
| 4 | S3 Resume failed |
| 7 | Reset PPI is not available. |

DXE Phase

| Status Code | Description |
|---|---|
| 0x60 | DXE Core is started. |
| 0x61 | NVRAM initialization |
| 0x62 | Installation of the South Bridge Runtime Services |
| 0x63 | CPU DXE initialization is started. |
| 0x64 | CPU DXE initialization (CPU module specific) |
| 0x65 | CPU DXE initialization (CPU module specific) |
| 0x66 | CPU DXE initialization (CPU module specific) |
| 0x67 | CPU DXE initialization (CPU module specific) |
| 0x68 | PCI host bridge initialization |
| 0x69 | North Bridge DXE initialization is started. |
| 0x6A | North Bridge DXE SMM initialization is started. |

| Status Code | Description |
|---|---|
| 0x6B | North Bridge DXE initialization (North Bridge module specific) |
| 0x6C | North Bridge DXE initialization (North Bridge module specific) |
| 0x6D | North Bridge DXE initialization (North Bridge module specific) |
| 0x6E | North Bridge DXE initialization (North Bridge module specific) |
| 0x6F | North Bridge DXE initialization (North Bridge module specific) |
| 0x70 | South Bridge DXE initialization is started. |
| 0x71 | South Bridge DXE SMM initialization is started. |
| 0x72 | South Bridge devices initialization |
| 0x73 | South Bridge DXE initialization (South Bridge module specific) |
| 0x74 | South Bridge DXE initialization (South Bridge module specific) |
| 0x75 | South Bridge DXE initialization (South Bridge module specific) |
| 0x76 | South Bridge DXE initialization (South Bridge module specific) |
| 0x77 | South Bridge DXE initialization (South Bridge module specific) |
| 0x78 | ACPI module initialization |
| 0x79 | CSM initialization |
| 0x7A – 0x7F | Reserved for future AMI DXE codes |
| 0x80 – 0x8F | OEM DXE initialization codes |
| 0x90 | Boot Device Selection (BDS) phase is started |
| 0x91 | Driver connecting is started |
| 0x92 | PCI Bus initialization is started |
| 0x93 | PCI Bus Hot Plug Controller initialization |
| 0x94 | PCI Bus Enumeration |
| 0x95 | PCI BUS Request Resources |
| 0x96 | PCI Bus Assign Resources |
| 0x97 | Console output devices connect |
| 0x98 | Console Input devices connect |
| 0x99 | Super IO initialization |
| 0x9A | USB initialization is started. |
| 0x9B | USB Reset |
| 0x9C | USB Detect |
| 0x9D | USB Enable |
| 0x9E -0x9F | Reserved for future AMI codes |
| 0xA0 | IDE initialization is started |
| 0xA1 | IDE Reset |
| 0xA2 | IDE Detect |

| Status Code | Description |
|---|---|
| 0xA3 | IDE Enable |
| 0xA4 | SCSI initialization is started. |
| 0xA5 | SCSI Reset |
| 0xA6 | SCSI Detect |
| 0xA7 | SCSI Enable |
| 0xA8 | Setup Verifying Password |
| 0xA9 | Start of Setup |
| 0xAA | Reserved for ASL (see ASL Status Codes section below) |
| 0xAB | Setup Input Wait |
| 0xAC | Reserved for ASL (see ASL Status Codes section below) |
| 0xAD | Ready To Boot event |
| 0xAE | Legacy Boot event |
| 0xAF | Exit Boot Services event |
| 0xB0 | Runtime Set Virtual Address MAP Begin |
| 0xB1 | Runtime Set Virtual Address MAP End |
| 0xB2 | Legacy Option ROM initialization |
| 0xB3 | System Reset |
| 0xB4 | USB hot plug |
| 0xB5 | PCI bus hot plug |
| 0xB6 | Clean-up of NVRAM |
| 0xB7 | Configuration Reset (reset of NVRAM settings) |
| 0xB8 – 0xBF | Reserved for future AMI codes |
| 0xC0 – 0xCF | OEM BDS initialization codes |
| **DXE Error Codes** | |
| 0xD0 | CPU initialization error |
| 0xD1 | North Bridge initialization error |
| 0xD2 | South Bridge initialization error |
| 0xD3 | Some of the Architectural Protocols are not available |
| 0xD4 | PCI resource allocation error. Out of Resources |
| 0xD5 | No Space for Legacy Option ROM |
| 0xD6 | No Console Output Devices are found. |
| 0xD7 | No Console Input Devices are found. |
| 0xD8 | Invalid password |
| 0xD9 | Error loading Boot Option (LoadImage returned error) |
| 0xDA | Boot Option is failed (StartImage returned error). |

| Status Code | Description |
|---|---|
| 0xDB | Flash update is failed. |
| 0xDC | Reset protocol is not available. |

DXE Beep Codes

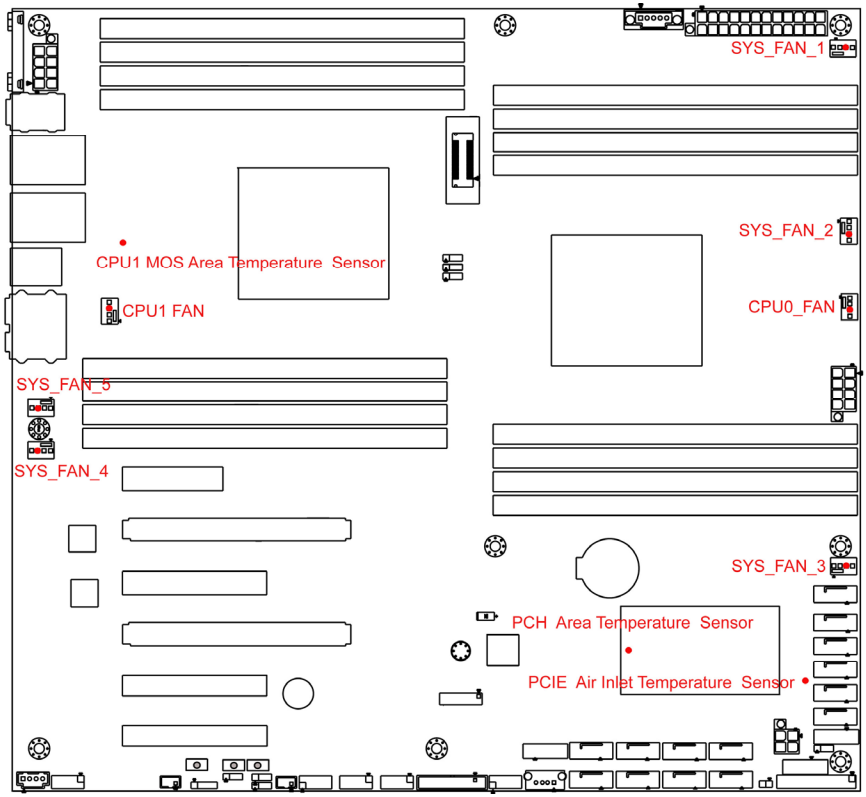
| # of Beeps | Description |
|---|---|
| 1 | Invalid password |
| 4 | Some of the Architectural Protocols are not available. |
| 5 | No Console Output Devices are found. |
| 5 | No Console Input Devices are found. |
| 6 | Flash update is failed. |
| 7 | Reset protocol is not available. |
| 8 | Platform PCI resource requirements cannot be met. |

**ACPI/ASL Checkpoints**

| Status Code | Description |
|---|---|
| 0x01 | System is entering S1 sleep state. |
| 0x02 | System is entering S2 sleep state. |
| 0x03 | System is entering S3 sleep state. |
| 0x04 | System is entering S4 sleep state. |
| 0x05 | System is entering S5 sleep state. |
| 0x10 | System is waking up from the S1 sleep state. |
| 0x20 | System is waking up from the S2 sleep state. |
| 0x30 | System is waking up from the S3 sleep state. |
| 0x40 | System is waking up from the S4 sleep state. |
| 0xAC | System has transitioned into ACPI mode. Interrupt controller is in APIC mode. |
| 0xAA | System has transitioned into ACPI mode. Interrupt controller is in APIC mode. |

# Appendix: Fan and Temp Sensors

This section aims to help readers identify the locations of some specific FAN and Temp Sensors on the motherboard. A table of BIOS Temp sensor name explanation is also included for readers' reference.

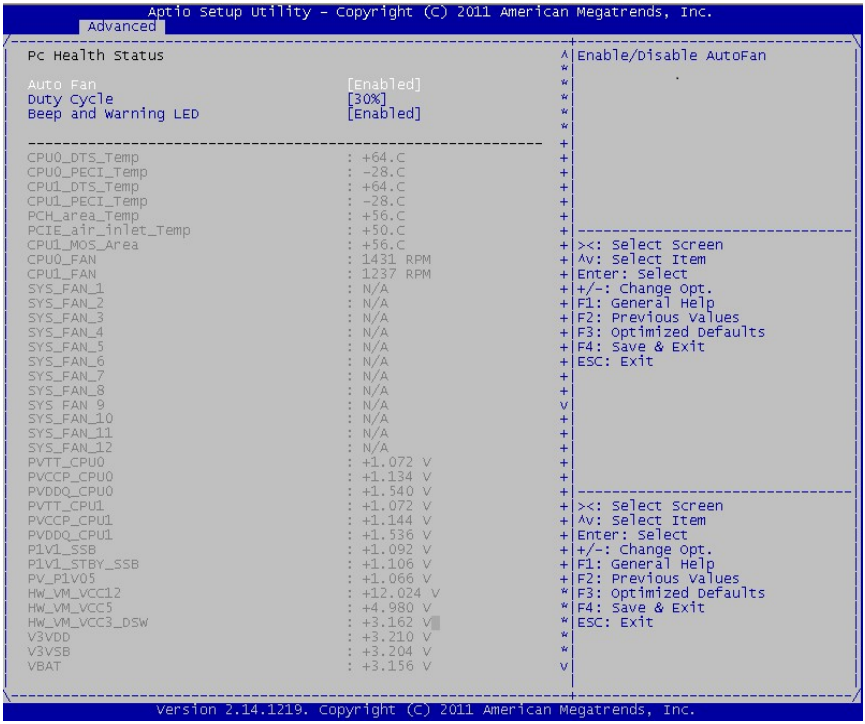



**NOTE:** The red dot indicates the location of the sensor.

**Fan and Temp Sensor Location:**

1. Fan Sensor: It is located in the third pin of the fan connector, which detects the fan speed (rpm)
2. Temp Sensor: PCH_Area_Temp sensor and PCI-E_Air_Inlet Temp sensor and CPU1 MOS Area Temp Sensor. They detect the system temperature around.
   **NOTE:** The system temperature is measured in a scale defined by **Intel**, not in Fahrenheit or Celsius.

## BIOS Temp Sensor Name Explanation:



| BIOS Temp Sensor | Name Explanation |
|---|---|
| **CPU0_DTS** | Temperature of the CPU0 Digital Temperature Sensor |
| **CPU1_DTS** | Temperature of the CPU1 Digital Temperature Sensor |
| **CPU0_PECI** | Temperature of the CPU0 Platform Environment Control Interface |
| **CPU1_PECI** | Temperature of the CPU1 Platform Environment Control Interface |
| **PCH_Area_Temp** | Temperature of the PCH Area |
| **PCIE_Air_Inlet_Temp** | Temperature of the PCI-E Air Inlet Area |
| **CPU1_MOS_area_Temp** | Temperature of the CPU1_MOS Area |
| **BIOS FAN Sensor** | **Name Explanation** |
| **CPU0_FAN** | Fan speed of CPU0_FAN |
| **CPU1_FAN** | Fan speed of CPU1_FAN |
| **SYS_FAN_1** | Fan speed of SYS_FAN_1 |
| **SYS_FAN_2** | Fan speed of SYS_FAN_2 |
| **SYS_FAN_3** | Fan speed of SYS_FAN_3 |
| **SYS_FAN_4** | Fan speed of SYS_FAN_4 |
| **SYS_FAN_5** | Fan speed of SYS_FAN_5 |
| **SYS_FAN_6** | Fan speed of SYS_FAN_6 |
| **SYS_FAN_7** | Fan speed of SYS_FAN_7 |
| **SYS_FAN_8** | Fan speed of SYS_FAN_8 |
| **SYS_FAN_9** | Fan speed of SYS_FAN_9 |
| **SYS_FAN_10** | Fan speed of SYS_FAN_10 |
| **SYS_FAN_11** | Fan speed of SYS_FAN_11 |
| **SYS_FAN_12** | Fan speed of SYS_FAN_12 |

# NOTE

# Glossary

**ACPI (Advanced Configuration and Power Interface):** a power management specification that allows the operating system to control the amount of power distributed to the computer's devices. Devices not in use can be turned off, reducing unnecessary power expenditure.

**AGP (Accelerated Graphics Port):** a PCI-based interface which was designed specifically for demands of 3D graphics applications. The 32-bit AGP channel directly links the graphics controller to the main memory. While the channel runs only at 66 MHz, it supports data transmission during both the rising and falling ends of the clock cycle, yielding an effective speed of 133 MHz.

**ATAPI (AT Attachment Packet Interface):** also known as IDE or ATA; a drive implementation that includes the disk controller on the device itself. It allows CD-ROMs and tape drives to be configured as master or slave devices, just like HDDs.

**ATX:** the form factor designed to replace the AT form factor. It improves on the AT design by rotating the board 90 degrees, so that the IDE connectors are closer to the drive bays, and the CPU is closer to the power supply and cooling fan. The keyboard, mouse, USB, serial, and parallel ports are built-in.

**Bandwidth:** refers to carrying capacity. The greater the bandwidth, the more data the bus, phone line, or other electrical path can carry. Greater bandwidth results in greater speed.

**BBS (BIOS Boot Specification):** a feature within the BIOS that creates, prioritizes, and maintains a list of all Initial Program Load (IPL) devices, and then stores that list in NVRAM. IPL devices have the ability to load and execute an OS, as well as provide the ability to return to the BIOS if the OS load process fails. At that point, the next IPL device is called upon to attempt loading of the OS.

**BIOS (Basic Input/Output System):** the program that resides in the ROM chip, which provides the basic instructions for controlling your computer's hardware. Both the operating system and application software use BIOS routines to ensure compatibility.

**Buffer:** a portion of RAM which is used to temporarily store data; usually from an application though it is also used when printing and in most keyboard drivers. The CPU can manipulate data in a buffer before copying it to a disk drive. While this improves system performance (reading to or writing from a disk drive a single time is much faster than doing so repeatedly) there is the possibility of

losing your data should the system crash. Information in a buffer is temporarily stored, not permanently saved.

**Bus:** a data pathway. The term is used especially to refer to the connection between the processor and system memory, and between the processor and PCI or ISA local buses.

**Bus mastering:** allows peripheral devices and IDEs to access the system memory without going through the CPU (similar to DMA channels).

**Cache:** a temporary storage area for data that will be needed often by an application. Using a cache lowers data access times since the information is stored in SRAM instead of slower DRAM. Note that the cache is also much smaller than your regular memory: a typical cache size is 512KB, while you may have as much as 4GB of regular memory.

**Closed and open jumpers:** jumpers and jumper pins are active when they are "on" or "closed", and inactive when they are "off" or "open".

**CMOS (Complementary Metal-Oxide Semiconductors):** chips that hold the basic startup information for the BIOS.

**COM port:** another name for the serial port, which is called as such because it transmits the eight bits of a byte of data along one wire, and receives data on another single wire (that is, the data is transmitted in serial form, one bit after another). Parallel ports transmit the bits of a byte on eight different wires at the same time (that is, in parallel form, eight bits at the same time).

**DDR (Double Data Rate):** a technology designed to double the clock speed of the memory. It activates output on both the rising and falling edge of the system clock rather than on just the rising edge, potentially doubling output.

**DIMM (Dual In-line Memory Module):** faster and more capacious form of RAM than SIMMs, and do not need to be installed in pairs.

**DIMM bank:** sometimes called DIMM socket because the physical slot and the logical unit are the same. That is, one DIMM module fits into one DIMM socket, which is capable of acting as a memory bank.

**DMA (Direct Memory Access):** channels that are similar to IRQs. DMA channels allow hardware devices (like soundcards or keyboards) to access the main memory without involving the CPU. This frees up CPU resources for other tasks. As with IRQs, it is vital that you do not double up devices on a single line. Plug-n-Play devices will take care of this for you.

**DRAM (Dynamic RAM):** widely available, very affordable form of RAM which looses data if it is not recharged regularly (every few milliseconds). This refresh requirement makes DRAM three to ten times slower than non-recharged RAM such as SRAM.

**ECC (Error Correction Code or Error Checking and Correcting):** allows data to be checked for errors during run-time. Errors can subsequently be corrected at the same time that they're found.

**EEPROM (Electrically Erasable Programmable ROM):** also called Flash BIOS, it is a ROM chip which can, unlike normal ROM, be updated. This allows you to keep up with changes in the BIOS programs without having to buy a new chip. TYAN®'s BIOS updates can be found at http://**www.TYAN.com**

**ESCD (Extended System Configuration Data):** a format for storing information about Plug-n-Play devices in the system BIOS. This information helps properly configure the system each time it boots.

**Firmware:** low-level software that controls the system hardware.

**Form factor:** an industry term for the size, shape, power supply type, and external connector type of the Personal Computer Board (PCB) or motherboard. The standard form factors are the AT and ATX.

**Global timer:** onboard hardware timer, such as the Real-Time Clock (RTC).

**HDD:** stands for Hard Disk Drive, a type of fixed drive.

**H-SYNC:** controls the horizontal synchronization/properties of the monitor.

**HyperTransport™:** a high speed, low latency, scalable point-to-point link for interconnecting ICs on boards. It can be significantly faster than a PCI bus for an equivalent number of pins. It provides the bandwidth and flexibility critical for today's networking and computing platforms while retaining the fundamental programming model of PCI.

**IC (Integrated Circuit):** the formal name for the computer chip.

**IDE (Integrated Device/Drive Electronics):** a simple, self-contained HDD interface. It can handle drives up to 8.4 GB in size. Almost all IDEs sold now are in fact Enhanced IDEs (EIDEs), with maximum capacity determined by the hardware controller.

**IDE INT (IDE Interrupt):** a hardware interrupt signal that goes to the IDE.

**I/O (Input/Output):** the connection between your computer and another piece of hardware (mouse, keyboard, etc.)

**IRQ (Interrupt Request):** an electronic request that runs from a hardware device to the CPU. The interrupt controller assigns priorities to incoming requests and delivers them to the CPU. It is important that there is only one device hooked up to each IRQ line; doubling up devices on IRQ lines can lock up your system. Plug-n-Play operating systems can take care of these details for you.

**Latency:** the amount of time that one part of a system spends waiting for another part to catch up. This occurs most commonly when the system sends data out to a peripheral device and has to wait for the peripheral to spread (peripherals tend to be slower than onboard system components).

**NVRAM:** ROM and EEPROM are both examples of Non-Volatile RAM, memory that holds its data without power. DRAM, in contrast, is volatile.

**Parallel port:** transmits the bits of a byte on eight different wires at the same time.

**PCI (Peripheral Component Interconnect):** a 32 or 64-bit local bus (data pathway) which is faster than the ISA bus. Local buses are those which operate within a single system (as opposed to a network bus, which connects multiple systems).

**PCI PIO (PCI Programmable Input/Output) modes:** the data transfer modes used by IDE drives. These modes use the CPU for data transfer (in contrast, DMA channels do not). PCI refers to the type of bus used by these modes to communicate with the CPU.

**PCI-to-PCI Bridge:** allows you to connect multiple PCI devices onto one PCI slot.

**Pipeline burst SRAM:** a fast secondary cache. It is used as a secondary cache because SRAM is slower than SDRAM, but usually larger. Data is cached first to the faster primary cache, and then, when the primary cache is full, to the slower secondary cache.

**PnP (Plug-n-Play):** a design standard that has become ascendant in the industry. Plug-n-Play devices require little set-up to use. Devices and operating systems that are not Plug-n-Play require you to reconfigure your system each time you add or change any part of your hardware.

**PXE (Preboot Execution Environment):** one of four components that together make up the Wired for Management 2.0 baseline specification. PXE was

designed to define a standard set of preboot protocol services within a client with the goal of allowing networked-based booting to boot using industry standard protocols.

**RAID (Redundant Array of Independent Disks):** a way for the same data to be stored in different places on many hard drives. By using this method, the data is stored redundantly and multiple hard drives will appear as a single drive to the operating system. RAID level 0 is known as striping, where data is striped (or overlapped) across multiple hard drives, but offers no fault-tolerance. RAID level 1 is known as mirroring, which stores the data within at least two hard drives, but does not stripe. RAID level 1 also allows for faster access time and fault-tolerance, since either hard drive can be read at the same time. RAID level 0+1 is both striping and mirroring, providing fault-tolerance, striping, and faster access all at the same time.

**RAIDIOS:** RAID I/O Steering (Intel)

**RAM (Random Access Memory):** technically refers to a type of memory where any byte can be accessed without touching the adjacent data and is often referred to the system's main memory. This memory is available to any program running on the computer.

**ROM (Read-Only Memory):** a storage chip which contains the BIOS; the basic instructions required to boot the computer and start up the operating system.

**SDRAM (Synchronous Dynamic RAM):** called as such because it can keep two sets of memory addresses open simultaneously. By transferring data alternately from one set of addresses and then the other, SDRAM cuts down on the delays associated with non-synchronous RAM, which must close one address bank before opening the next.

**Serial port:** called as such because it transmits the eight bits of a byte of data along one wire, and receives data on another single wire (that is, the data is transmitted in serial form, one bit after another).

**SCSI Interrupt Steering Logic (SISL):** Architecture that allows a RAID controller, such as AcceleRAID 150, 200 or 250, to implement RAID on a system board-embedded SCSI bus or a set of SCSI busses. SISL: SCSI Interrupt Steering Logic (LSI) (only on LSI SCSI boards)

**Sleep/Suspend mode:** in this mode, all devices except the CPU shut down.

**SDRAM (Static RAM):** unlike DRAM, this type of RAM does not need to be refreshed in order to prevent data loss. Thus, it is faster and more expensive.

**SLI (Scalable Link Interface)**: NVIDIA SLI technology links two graphics cards together to provide scalability and increased performance. NVIDIA SLI takes

advantage of the increased bandwidth of the PCI Express bus architecture, and features hardware and software innovations within NVIDIA GPUs (graphics processing units) and NVIDIA MCPs (media and communications processors). Depending on the application, NVIDIA SLI can deliver as much as two times the performance of a single GPU configuration.

**Standby mode:** in this mode, the video and hard drives shut down; all other devices continue to operate normally.

**UltraDMA-33/66/100:** a fast version of the old DMA channel. UltraDMA is also called UltraATA. Without a proper UltraDMA controller, your system cannot take advantage of higher data transfer rates of the new UltraDMA/UltraATA hard drives.

**USB (Universal Serial Bus):** a versatile port. This one port type can function as a serial, parallel, mouse, keyboard or joystick port. It is fast enough to support video transfer, and is capable of supporting up to 127 daisy-chained peripheral devices.

**VGA (Video Graphics Array):** the PC video display standard

**V-SYNC:** controls the vertical scanning properties of the monitor.

**ZCR (Zero Channel RAID):** PCI card that allows a RAID card to use the onboard SCSI chip, thus lowering cost of RAID solution

**ZIF Socket (Zero Insertion Force socket):** these sockets make it possible to insert CPUs without damaging the sensitive CPU pins. The CPU is lightly placed in an open ZIF socket, and a lever is pulled down. This shifts the processor over and down, guiding it into the board and locking it into place.

# Technical Support

If a problem arises with your system, you should first turn to your dealer for direct support. Your system has most likely been configured or designed by them and they should have the best idea of what hardware and software your system contains. Hence, they should be of the most assistance for you. Furthermore, if you purchased your system from a dealer near you, take the system to them directly to have it serviced instead of attempting to do so yourself (which can have expensive consequences).

If these options are not available for you then TYAN® Computer Corporation can help. Besides designing innovative and quality products for over a decade, TYAN® has continuously offered customers service beyond their expectations. TYAN®'s website (**www.TYAN.com**) provides easy-to-access resources such as in-depth Linux Online Support sections with downloadable Linux drivers and comprehensive compatibility reports for chassis, memory and much more. With all these convenient resources just a few keystrokes away, users can easily find the latest software and operating system components to keep their systems running as powerful and productive as possible. TYAN® also ranks high for its commitment to fast and friendly customer support through email. By offering plenty of options for users, TYAN® serves multiple market segments with the industry's most competitive services to support them.

**"TYAN's tech support is some of the most impressive we've seen, with great response time and exceptional organization in general"**

**----Anandtech.com**

**Help Resources:**

1. See the beep codes section of this manual.
2. See the TYAN® website for FAQ's, bulletins, driver updates, and other information: **http://www.TYAN.com**
3. Contact your dealer for help BEFORE calling TYAN®.
4. Check the TYAN® user group:
   **alt.comp.periphs.mainboard.TYAN**

**Returning Merchandise for Service**

During the warranty period, contact your distributor or system vendor FIRST for any product problems. This warranty only covers normal customer use and does not cover damages incurred during shipping or failure due to the alteration, misuse, abuse, or improper maintenance of products.

NOTE: A receipt or copy of your invoice marked with the date of purchase is required before any warranty service can be rendered. You may obtain service by calling the manufacturer for a Return Merchandise Authorization (RMA) number. The RMA number Should be prominently displayed on the outside of the shipping carton and the package should be mailed prepaid. TYAN® will pay to have the board shipped back to you.

**Notice for the USA**

Compliance Information Statement (Declaration of Conformity Procedure) DoC
FCC Part 15: This device complies with part 15 of the FCC Rules

Operation is subject to the following conditions:
·This device must not cause harmful interference.
·This device must accept any interference received, including interference that may cause undesirable operation.
This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

**Notice for Canada**

This Class A digital apparatus complies with Canadian ICES-003. Cet appareil numérique de la Classe A est conforme à la norme NMB-003 du Canada.

Notice for Europe (CE Mark)

This product is in conformity with the Council Directive 2004/108/EC.

CAUTION: Lithium battery included with this board. Do not puncture, mutilate, or dispose of battery in fire. There will be danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by manufacturer. Dispose of used battery according to manufacturer instructions and in accordance with your local regulations.

**Document #:** D2182-100